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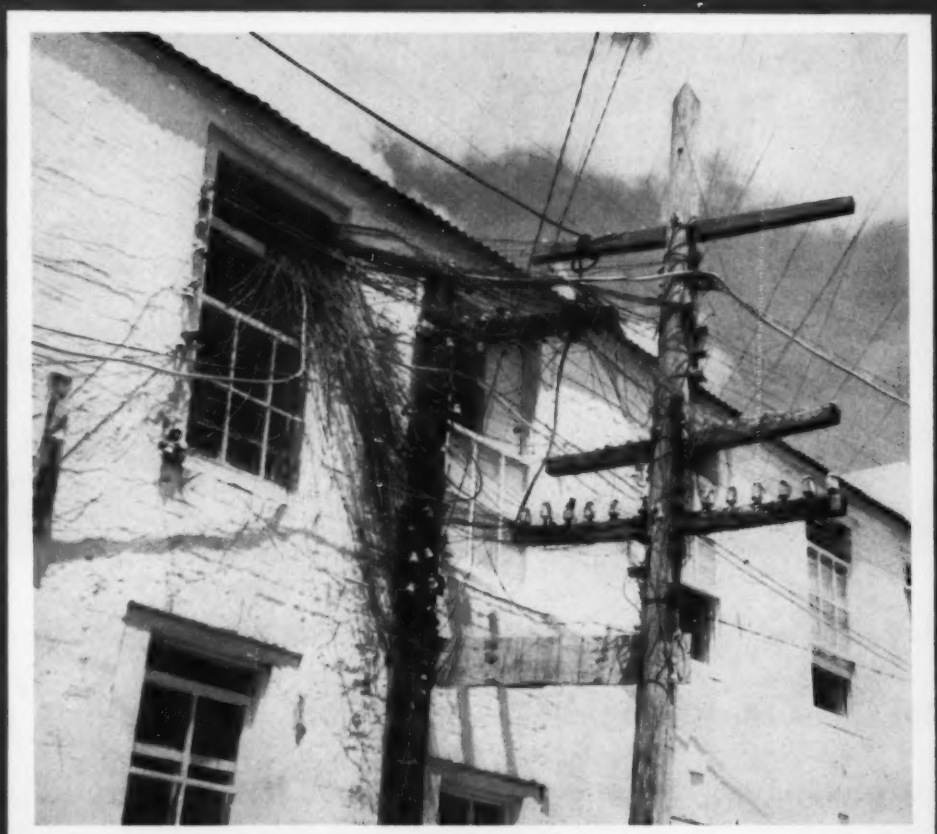
Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



MAN-MADE MAZE

Even though there is a faint resemblance, this is not a photo of a bird's nest. It is the permanent wiring entering the telephone exchange at St. John's, Antigua, British West Indies. Photo, British Post Office Magazine.

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•

BABY DIALS BUNNY. Just before Easter, a Los Angeles youngster, Scooter Mollison, 3, got into a big argument with his mother. He got so mad at her, according to the *Los Angeles Times*, that he threatened to warn the Easter bunny not to bring her anything at all.

She paid no attention until she heard him on the telephone in the next room demanding to talk with the bunny—right now. Investigating, she found Scooter had gotten a direct dialing long-distance number to the bewilderment of the lady on the other end.

The *Times* quoted Scooter's mother as saying all parents of small fry should be alert to the unique possibilities for juvenile catastrophe inherent in the new ability to dial from California to New York.

•

DUTCH TREAT. *Lincoln Telephone News* published by the Lincoln (Neb.) Telephone & Telegraph Co. tells about Operator Helen Kreiger, who quoted the rate to Holland (20 miles southeast of Lincoln) at a customer's request.

She was quite surprised to learn that the overseas operator was next to hear from her subscriber. He was trying to get through to Amsterdam for 25 cents.

•

UNTAPPED MARKET. Forty salesmen for 11 St. Joseph, Mo., auto dealers made 17,000 telephone calls in two days recently to remind residents of approaching "auto-buy" week.

Result: In the following seven days, 454 new and used cars and trucks were sold. In the preceding 20 days, the same dealers sold only 264 units.

•

HOT IN TEXAS. The *Kablegram* reports that a Texas oilman visiting in Pittsburgh made a telephone call and screamed his head off when the operator told him the charge was 60 cents.

"What!" he roared. "Back in Odessa, Texas, I could talk to hell and back for 60 cents!"

"Maybe so" replied the operator curtly. "But from Odessa that would be a local call."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

May 3, 1958

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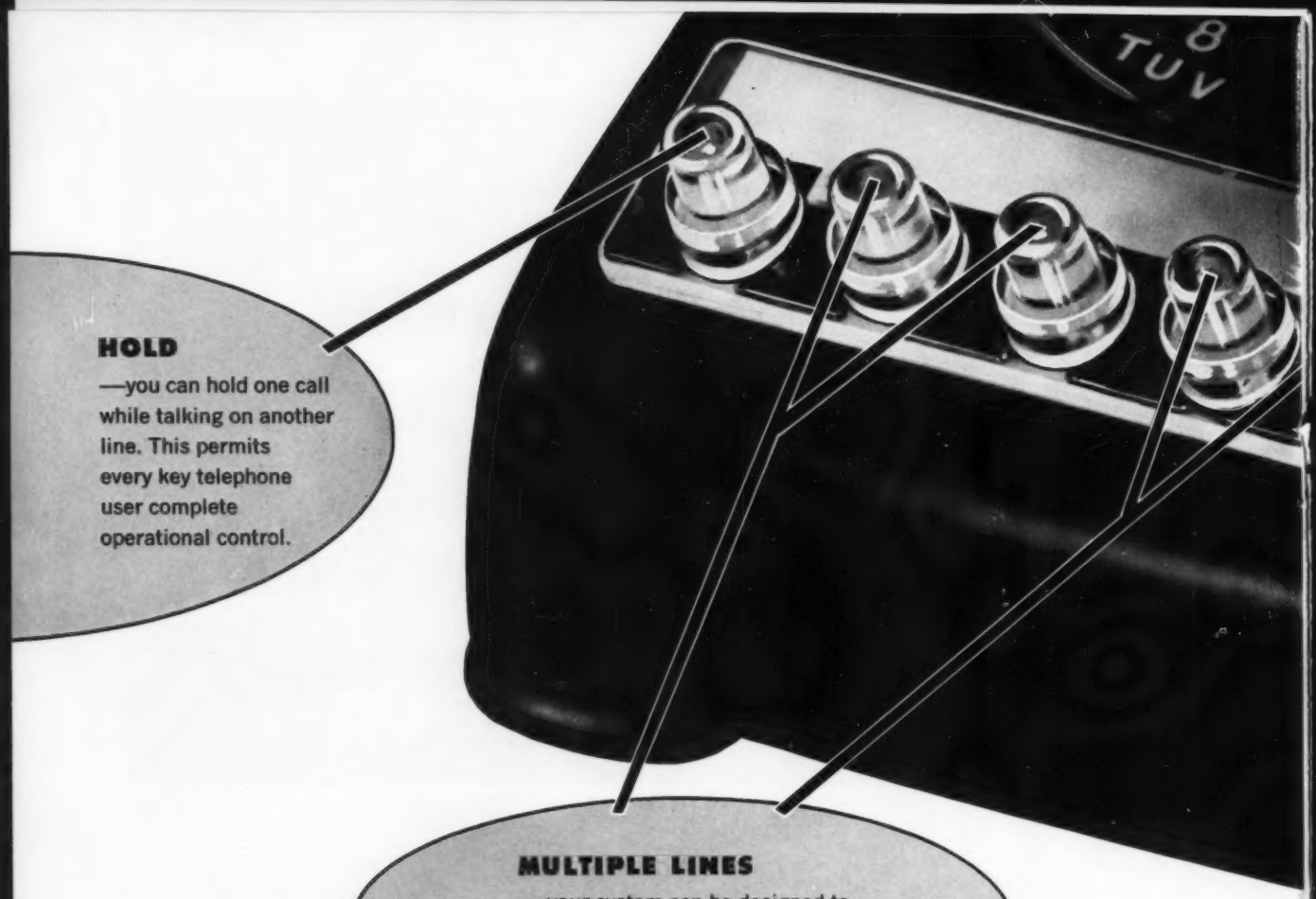

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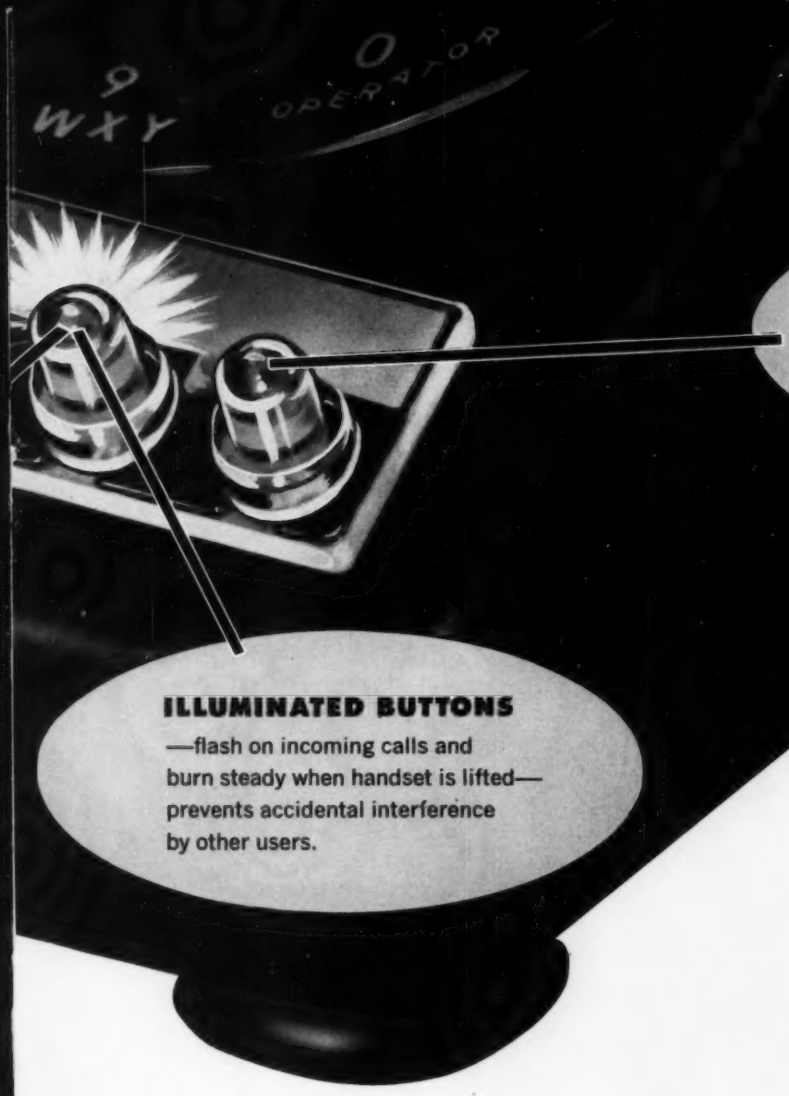

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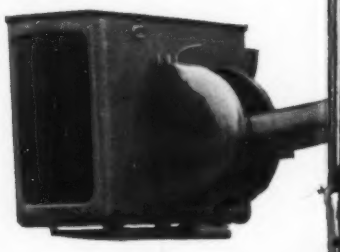

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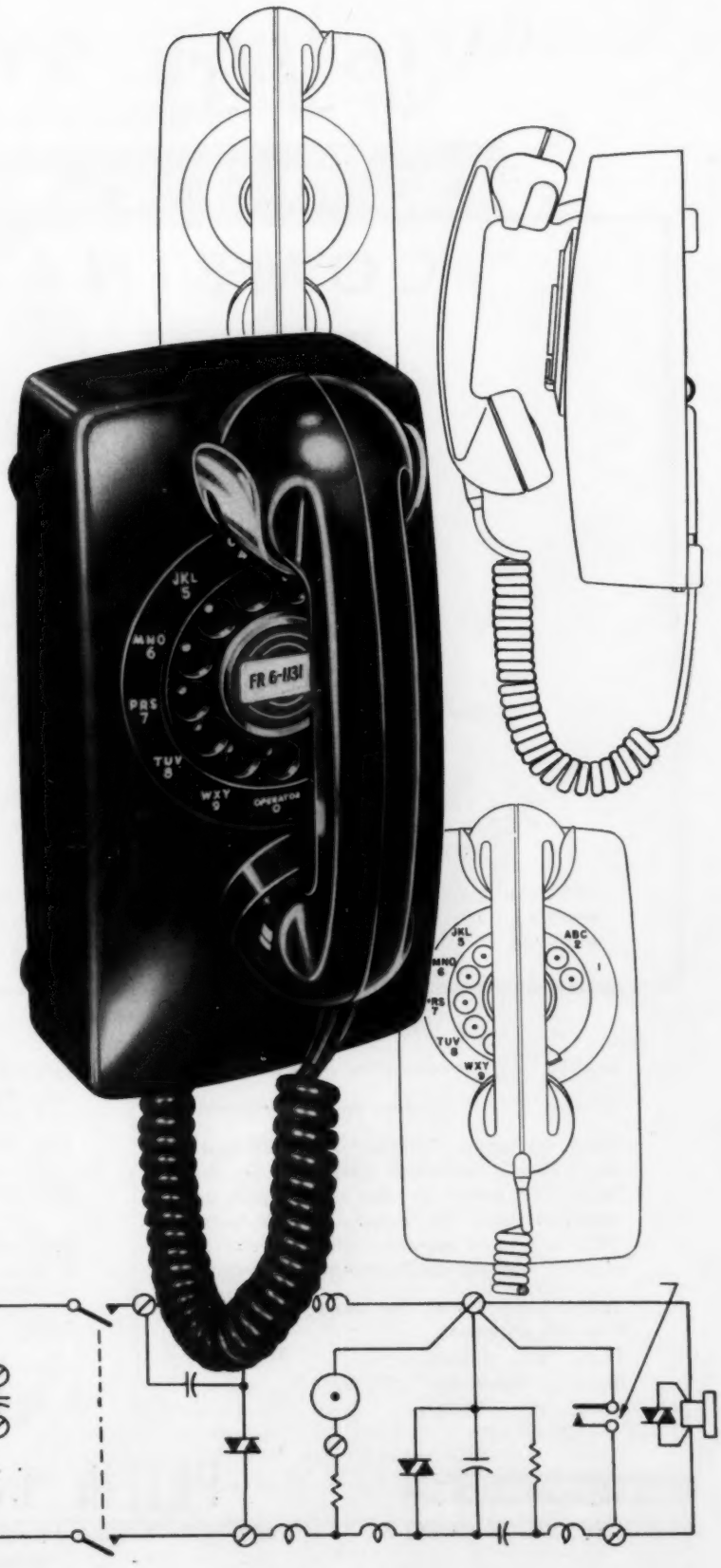

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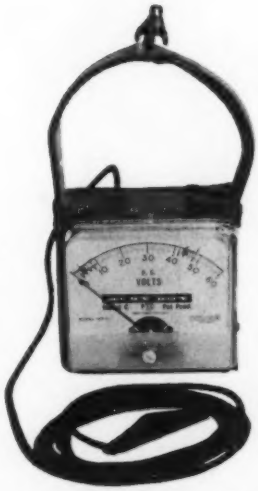

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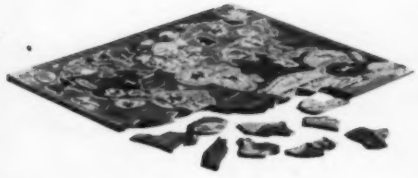

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Telephone companies all but banished from 890-942 megacycle band. . . . 2110-2200 megacycle band beckons. House Antitrust Subcommittee digs into Bell System policy on buying from Western Electric. Wisconsin Bell company defends proposed purchase of Menomonee Falls Telephone Co. before FCC.

LAST WEEK (Apr. 21-25) witnessed a three-ring circus in Washington for the telephone industry, previously commented upon in this department. Most of the activity involved the Bell System. Of primary importance to that group was the so-called Celler Subcommittee of the House Judiciary Committee investigating the Western Electric Co.'s antitrust consent decree.

Then there was a continuation of the hearings of the House Subcommittee on Legislative Oversight which proceeded to go into matters involving the Federal Communications Commission (although these particular sessions were mainly concerned with so-called "patent abuses" in the radio-television field).

The third ring performance involved the hearings, before FCC Chief Examiner James D. Cunningham, in the so-called Menomonee Falls (Wis.) Bell acquisition case. The United States Independent Telephone Association is an intervener in the Menomonee Falls proceedings.

Before reporting on these three-ring performances, mention should first be made of an FCC development of primary importance to the entire telephone industry. That was a proposed decision of the commission on reallocation of national and international radio frequencies which, incidentally, disposes of a number of cases in which telephone industry interests, in the use of so-called microwave frequencies, have been summarily disposed of. This action, which came sooner than this writer expected, probably deserves prior attention from the standpoint of immediate importance.

Telephone Companies Lose Microwave Status

To get the bad news over with in a hurry, it should be said right off that the FCC has denied, in effect, requests of the telephone industry for microwave frequencies in the 890-942 megacycle section of the radio spectrum.

It will be recalled that earnest pleas were made in several of these earlier cases (to use the somewhat baffling designation favored by the FCC, Docket Nos. 11866 and 11997) to the effect that the telephone and telegraph companies (or to use another incomprehensible term of the FCC's, "common carriers") should be permitted the preferred, if not exclusive use, of certain frequencies for conducting their public communications business rather than private industries seeking to use these frequencies.

The FCC has not decided these telephone petition cases on their merits. But as far as actual result is concerned, it might as well have done so, because the commission's orders of Apr. 18 will have the actual effect of banishing *all* nongovernment usage in the 890-942 megacycle band. This is being done to set up a broader reservation of frequencies for a so-called "radio-positioning" use by the federal government.

The FCC's proposed orders and opinions do not make it clear just what is meant by "radio-positioning" use. But it is a good bet that the requirement is for military or defense purposes, and that the exact technique or mechanics to be used will remain confidential. It is also a good bet that so-called "radio-positioning" has something to do with missile detection, although this writer is only speculating on this point as a result of what he has been told by some of the radio experts.

Does this mean that telephone companies, which have already done considerable pioneering work and made considerable investment in equipment for using frequencies in the 890-942 megacycle band, will now have to clear out?

The answer seems to be: Not right away. Those who are now operating or set up for such microwave frequency use may continue to operate. But they will have to accept certain interference and restrictions, such as interference caused by so-called ISM users (meaning industrial, scientific, and medical usage).

So far, and for the immediate future, this ISM usage is not very considerable or troublesome for the telephone companies. They will probably be able to get along until the end of their own present usage authority under FCC regulations. This would run through 1961 for most companies.

But actually there will not be permitted any *new* telephone company microwave establishments, under the proposed FCC order, in the 890-942 megacycle band. But what do the telephone companies do after 1961, or earlier—if they need new microwave frequencies in this area?

For the present, they would seem to be out of luck. The FCC's proposed orders of Apr. 18 do provide for telephone company usage in the 2110-2200 megacycle band area of the spectrum. But inasmuch as no manufacturers are presently making equipment to operate on such frequencies, this FCC authorization is something like giving telephone companies permission to put their own earth satellites into orbit.

Furthermore we must not be misled by the repeated use of the phrase "proposed orders." It is unlikely that these orders will be upset. True, following the usual custom, the FCC order (Docket No. 12404) recites as a matter of rou-

tine that "any interested person who is of the opinion that the proposed amendments . . . should not be adopted may file with the Commission on or before July 16, 1958, written data, views or arguments setting forth his comments."

It is also duly promised that the commission will consider such comments before taking final action. But as a practical matter, telephone people might as well save their breath, because this proposed action is actually based on a broader authority than the FCC.

In other words, the FCC is simply putting into black and white the controlling requirements of the Defense Department. Furthermore, the commission frankly states that these changes "have been prompted by the convening of the Radio Conference of the International Telecommunication Union in Geneva, Switzerland, scheduled to begin July 1, 1959." This means that the FCC intends to clear up all these allocations spanning the entire radio spectrum for both national and international usage before the Americans go to Switzerland next year.

What the telephone industry will have to do about this matter appears to have been decided on the basis of much broader considerations.

What about all the arguments that the telephone companies can make better use of certain frequencies than private industry? The FCC will still go through the motions of hearing these cases. The order states, on this point:

"The commission is still considering comments and/or testimony received in Dockets 11866 and 11997 in connection with such subjects as licensee eligibility, technical standards, various philosophies expressed in connection with private versus common carrier uses of the radio frequency spectrum and various sub-allocations to non-government services.

"No specific proposals concerning these matters are being issued at this time and such matters will continue to be studied by the commission.

"However, as a result of the commission's order adopted today (Apr. 18) amending its Table of Frequency Allocations, non-government services will have suffered a loss of spectrum space above 890 Mc. Additional space will be lost by some of these services if the allocations proposals set forth herein are adopted.

"Therefore, it must be recognized that, to the extent such services may lose spectrum space, such possible loss will necessarily have a bearing on subsequent decisions of the commission concerning sub-allocations and licensee eligibility.

"The commission wishes to direct especial attention to its proposal in connection with the band 942-952 Mc. As evidenced in the proceeding in Docket No. 11866, there exists a particularly difficult allocation problem arising from the fact that common carriers have extensively activated domestic fixed systems in the band 890-940 Mc wherein the frequency 915 Mc has been allocated both nationally and internationally for ISM use with the condition that radio-communications service in this band would have to accept any interference caused by the operation of ISM equipment.

"In the commission's order adopted today, the band 890-942 Mc was allocated, due to national defense considerations, to the government. Although serious consideration was given by the commission and by the ODM (office of Defense Mobilization) to the possibility of ISM interference to government services, the ODM has recognized that the radio-positioning service in the band 890-940 Mc must accept any harmful interference caused by the operation of ISM equipment on 915 Mc.

"The operation of government stations in the 890-942 Mc band will increase the likelihood of additional interference being caused to those existing fixed stations which may continue to be authorized in this band and the commission's order reallocating the band takes this fact into consideration and 'freezes' the band as far as new assignments are concerned. . . ."

Translated into English this means that telephone companies will get no more use of 890-942 megacycle frequencies except for those who are already using them. Those who are already using them will be permitted to continue, subject to certain interference and restrictions, until their present authorities terminate. Those telephone companies which want to use new microwave frequencies hereafter will have to "move upstairs" to the 2110-2200 megacycle band which has been designated for "use by common carrier fixed."

So far that field is wide open. Just like real estate on the moon. Among other specific cases before the FCC, involving telephone interests in the use of the 890-942 megacycle frequencies, the following have been dismissed as "moot":

Petition of the Lenkurt Electric Co., Inc. (filed June 5, 1953, Docket No. 10797).

Petition of Motorola, Inc. (filed June 31, 1955, Docket No. 10797).

Petition of the United States Independent Telephone Association (filed Feb. 21, 1956, Docket No. 10797).

By dismissing a case as "moot," the commission means that it will not even bother deciding such a case, in view of the fact that there is no sense in a further operation on a patient once he has become deceased. With the over-all banishment of all nongovernment users from the 890-942 megacycle band, the hopes of all these parties to use such frequencies have now become extinct.

Celler Subcommittee Hearings

Up on Capitol Hill at the so-called "storm cellar" hearings, the House Anti-trust Subcommittee continued to give the Bell System witnesses a hard time. These hearings, which are being conducted by the subcommittee chairman, Representative Emanuel Celler (D., N. Y.), seem to be dedicated to the purposes of showing that the Justice Department went soft when it agreed with the Bell System to end the government's antitrust suit in 1956. This was done in the form of a consent decree terminating the suit originally brought to divorce Western Electric from the Bell System.

The main witness was Horace P. Moulton, general counsel of the American Telephone & Telegraph Co. The subcommittee's assistant counsel took up the question of patent provisions of the consent decree. He wanted to know if the granting of patents by Bell to Independent telephone company and other manufacturers would give such manufacturers the right to sell to Bell companies.

Mr. Moulton said of course it would, provided the manufacturer could produce and sell as good or better a product as Western Electric, at as good or better a price. He pointed out that Independent manufacturers had sold to Bell companies under such circumstances. The Bell System, he said, "is not in the manufacturing business just to manufacture—we manufacture for our own use in providing a public service."

Representative McCulloch (R., Ohio) wanted to know if Bell companies are restricted in any way from purchasing equipment from manufacturers other than Western Electric. Mr. Moulton said that Western Electric's price advantage was the main reason why Bell system companies buy most of their equipment from Western Electric.

Moulton also made an interesting point that Western Electric prices are subject to indirect regulation by the federal and state commissions. This results from the fact that these commissions pass on the reasonableness of Western Electric's prices and profits in the course of rate cases involving the Bell System operating companies. He said that this had happened in 250 rate cases since the end of World War II.

A ghost of the old Walker investigation of the Bell System in 1939 was taken out of the closet for a brief airing by Subcommittee Counsel Maletz. He started to quote some critical excerpts from a preliminary report of that investigation filed by former FCC Commissioner Paul A. Walker.

(Please turn to page 56)

Underground Conduit and Lowered Cable

By JOHN GRANT

AN UNDERGROUND conduit installation can rarely be proved in by an economic cost study. Usually it is built because an aerial supporting structure is objectionable either from a public relations standpoint or it is impractical. More and more the value of underground plant is being realized for reasons of appearance, safety and continuity of service.

As municipalities increase in population, the demand for telephone service often occurs at the periphery, not in the saturated areas which have been built up for a considerable number of years. This means that more and more large cables must radiate from the central office through the built-up sections into the growing outer areas. This increasing number of cables makes it more difficult to maintain aerial construction in that part of the route nearer the central office.

However, unless forced by circumstances to do so, a company, from an economic standpoint, probably would not want to build underground conduit to supplement or replace an existing pole line, until the latter is loaded to its full physical capacity. If the poles are jointly used (whether owned by the telephone company or by the power company), the strength and space capacity may be for only one or two large sized cables. Joint-use agreements often restrict telephone cables to one side of the poles, which limits the space available for telephone contacts.

In many cases, where the poles support a number of small-sized cables, it might be prudent to replace these cables with larger ones, before an expenditure for underground conduit is made. Likewise, existing conduit cannot be prudently re-enforced as long as existing ducts contain small-sized cables. These cables must be replaced with larger ones, before additional conduit can be justified. In this case, care must be exercised not to occupy the last remaining duct until the last small cable has been removed from the conduit.

Impending public improvements, such as road or street widening, sidewalk construction, bridge building, etc., may change the requirement picture by hastening the placing of conduit in advance of such public construction and by increasing the number of ducts placed. The timing should also take into account that better construction prices can be obtained at certain seasons of the year in some parts of the country.

When it has been determined that underground conduit is to be placed, the question naturally arises: How many ducts should be provided? If too many are placed, then the annual charges will be too high, and the vacant ducts must lie idle too long before they are occupied. On the other hand, if too few ducts are provided, additional ducts must be placed at too short an interval, resulting in too great an expenditure in trench work. The economic number of ducts depends upon the frequency of placing large-sized cables in them. That is, for any average frequency there is a corresponding number of ducts that is economical —not too many, and not too few.

The economical number of ducts for growth as a function of the frequency of placing large cables can be determined graphically. Other ducts should be added for housing cables to be placed immediately and for municipal use, where it is necessary to provide duct space for this purpose.

Fig. 1—A graph for determining the economical number of ducts—is based

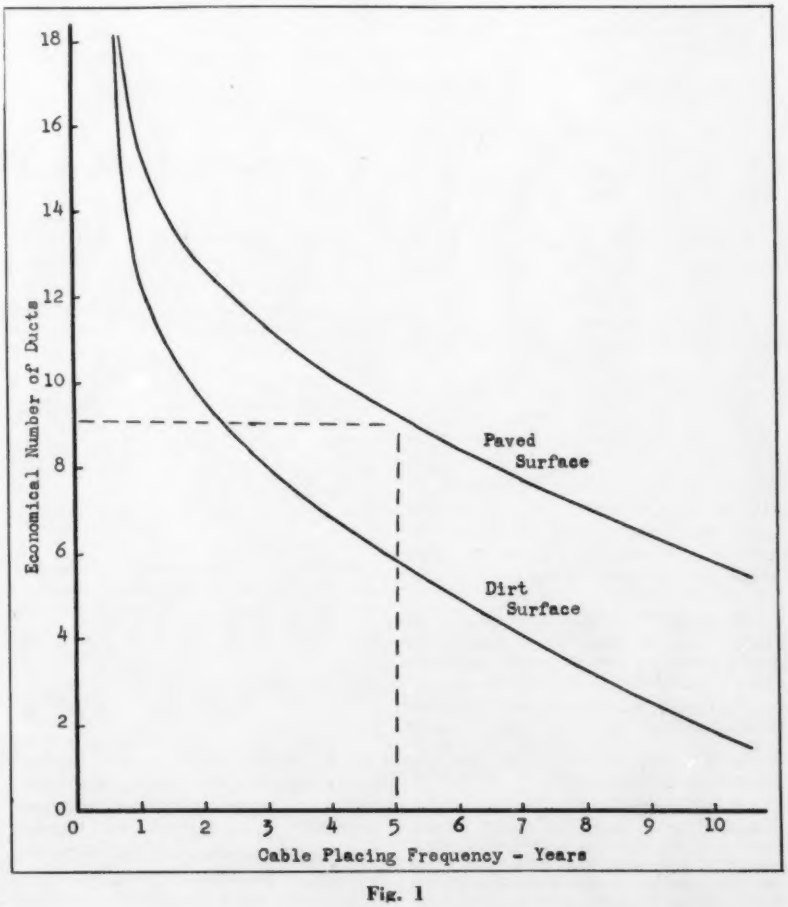

Fig. 1

upon average contract prices for labor and materials and average soil conditions. If difficult digging conditions exist, then it is of an advantage not to have to dig the trench so often. In this case, the graph for the paved surface might also provide a more equitable answer under the bad digging conditions. The use of the graph to aid in determining the number of ducts to place is illustrated in the following example.

Suppose it has been decided that an underground conduit run is to be built. In connection with this job, one cable is to be placed in the new conduit immediately. It is expected a large-sized cable will be required every five years thereafter for an indefinite period. The municipality will also require a duct for its use. How many ducts should be placed, if the surface is paved (or about to be paved)?

On the graph, locate the "Cable Placing Frequency" of five years. Contact with the "Paved Surface" curve shows the economical number of ducts required for growth to be nine ducts. Therefore, the number of ducts to be specified is:

For immediate cable	1 duct
For municipal use	1 duct
For growth	9 ducts
Total required	11 ducts

If the conduit is of the single duct type, 11 ducts should be placed. On the other hand, if multiple duct is used, it will probably be found best to place two six-way conduits, rather than to endeavor to build up exactly 11 ducts, handling a number of multiple combinations to form this cross-section.

By having properly located the pole lead and the conduit run with respect to each other in the transverse direction of the thoroughfare, it is oftentimes possible to drop aerial cables off the poles into the conduit trench at the foot of the poles as the underground conduit is being constructed. If this is done, it should be accomplished after the ducts are laid, but before the trench is completely back-filled. This procedure provides the opportunity to

(1) Obtain the financial benefit of cheaper aerial plant for a number of years along a route where the ultimate demands call for underground.

(2) Obtain maximum use from the original aerial cable by converting it into a buried cable without having to suffer the depreciation loss and the expense of replacing it.

(3) Eliminate contacts on power company poles and the space rental involved. In the case of a telephone company non-joint use line, the poles usually may be removed. As the trench line usually is quite close to the individual poles, it makes it possible to remove the reusable ones for use elsewhere without removal damage.

(4) Reduce the future annual charges from those for both aerial and underground plant to underground only.

(5) Eliminate the ever-present hazards to aerial plant along thoroughfares subject to heavy vehicular traffic.

(6) Improve public relations by placing all plant underground. In some localities, more and more pressure is being exerted to remove aerial plant from streets, whenever possible.

Before a decision can be made in favor of lowering existing aerial cable into a conduit trench, the types and sizes of cables should be considered. If the aerial cables have lead sheaths, it has been the practice to cover them with a tar compound and wrap them with a fibre band to protect the sheaths from possible corrosion before placing them into the trench.

The necessity for this procedure has been questioned, and has not been thought justified except in rare instances. In most cases, it is not economical, except where the cable is of large size, i.e., 900 pairs or larger. If the aerial cable is of the plastic sheath type no tar compound or wrapping is required, before the cable is lowered into the trench. In any case, it does not pay to lower small cables. In many cases, these small cables are used for distribution and so cannot be lowered without extensive (and expensive) rearrangements. If they must be removed from the street, they may be replaced by cables within the block along the rear property lines.

This lowering of the larger aerial cables when conduit is built is coming more and more into practice, being almost standard in some areas. It cannot be recommended for old lead sheathed cables, however. Such cables often are serviceable as long as they are not disturbed, but when they are handled, the sheath may crystallize, or they may be found badly ring-cut. Under either of these considerations, the cable had best be replaced by a new underground one, if removal of the aerial plant is economical, desirable, or necessary.

Plastic sheath cable can be lowered into the open trench (after the conduit has been covered with several inches of dirt) easily and economically by ordinary line crews. As noted above, this practice makes maximum use of still useful aerial cable, instead of replacing it with a new underground cable, by converting it into a buried cable without service interruption, and takes advantage of a cable investment previously made.

Buried Cable or Underground Conduit?

Let us assume that a decision is made to install an underground feeder cable to provide pair facilities from the central office to serve distribution plant (wire, small cables, etc.). Due to the lack of available ground width, paved driveways, aprons at intersecting streets or highways, tree roots, etc., a cable cannot be plowed into the ground. It then becomes necessary to use one of two alternatives, viz.: Buried cable or underground conduit with underground cable. Which of these methods shall be used?

Buried cable alone may be placed to considerable advantage, when one cable will suffice to serve the area involved. For this type of job, it is then necessary to dig a trench, which considerably increases the cost of placing the cable, and may justify one of several possibilities:

(1) *Placing a larger cable than would ordinarily be placed,* thus reducing the cost per pair and providing facilities for a longer than normal time and for unexpected pair demands. (Buried cable alone should be placed only when there is considerable certainty that it will not have to be reinforced. Cable, particularly having a plastic sheath, can be placed under these conditions with considerable economy, as it does not require the expense of building underground conduit first).

(2) *Placing both buried cable and conduit in the trench.* Under some conditions of growth, it may be necessary to place cables at fairly frequent intervals of several years each. In such cases only, buried cable in a trench should not be considered, for within a few years after the first cable is placed, another trench must be dug for a second cable. It becomes apparent that too much money must be spent opening and closing the ground surface, as a great part of the cost of a subsurface installation is in digging and backfilling the trench.

Therefore, while the trench is open to bury the cable, advantage should be taken of the opportunity to eliminate future trenching expense, by also placing conduit in the trench instead of just the single cable. This applies only where the area may be served

(Please turn to page 58)

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE ATTENDED a meeting in New York City the other day of the committee in charge of making preliminary arrangements for the Seventh Annual Wire and Cable Symposium, which is jointly sponsored by the U. S. Army Signal Engineering Laboratories and the wire industry. This year's meeting is scheduled for Dec. 2, 3, and 4, 1958, at the Berkeley-Carteret Hotel, Asbury Park, N. J.

J. L. Robb, of Superior Wire and Cable Corp., is also a member of this committee and we took advantage of this opportunity to discuss with him the new color code and proposed changes in cable sizes. We believe that you may also be interested in this subject and for this reason we are going to pass along some of the items discussed.

We expressed a doubt as to any immediate advantage that would be obtained from the use of color-coded cables in the outside plant distribution system of the average telephone exchange. Jim disagreed with this and cited a case in which a new color-coded cable was extended several miles out into the country in a certain exchange. The cable terminals were connected in much less time and with considerably less skill than would have been required had cable splicers used the old method of tone identification of pairs to connect each terminal. We must admit that this is certainly a cogent argument for the use of color-coded cable.

Jim is also of the opinion that the new REA specifications for color coding will probably be standardized by the industry. In this specification, 25 color combinations are used: blue, orange, green, brown, slate paired with white, red, black, yellow and violet. These 25 combinations are used in 25-pair cables. Smaller cables use part of the combinations, as required. For instance, a 6-pair cable uses the first six color combinations in the sequence. In cables larger than 25 pairs, units are used to form the cables. Manufacturing methods require that some of these units be smaller than 25 pairs. When this happens, however, the units are so arranged that they will always add up to 25.

For example, a manufacturer will use units of 12- and 13-pairs in a cable. A 13-pair unit will contain the first 13 colors in the sequence, and the 12-pair unit will contain the remaining 12 color combinations. Each of these units will be bound with the same color binder. For example, a blue-white binder.

When the splicer opens the cable, he locates the two units (one—12-pair, one—13-pair) with the blue-white binders. He now has 25 pairs which follow the color scheme from one to 25 and can proceed to splice them as necessary. The same method is followed with units containing 8 and 9 pairs using an 8-8-9 combination to make 25 pairs. The binders used on the units follow the same color scheme as the pairs themselves. Binders are blue-white, orange-white, green-white, brown-white, etc.

We also discussed the proposed changes in cable sizes with Mr. Robb and obtained the following information. The new REA specifications call for 6, 12, 18, 25, 50, 100, 200, 300 pairs, etc. While it is true that the above-described color coding system lends itself to cables using 25 pairs or multiples of 25 pairs, this is not the only reason for the change in the number of pairs.

In these new cables, all pairs must be good. No manufacturer can ship reels of cable containing defective pairs; therefore, the need for extra pairs which were originally placed in cables to enable the manufacturer to guarantee a minimum number of good pairs no longer exists. Guaranteeing all pairs is entirely feasible in plastic cable.

Furthermore, there are some people who believe that using 25 pairs and multiples thereof will simplify assignment procedures and may eventually lead to automatic assignment of cable pairs by electronic computers.

REA has elected to use 6, 12 and 18 pairs in the smaller cables to meet the requirements of the new "ready access" terminals wherein the terminal blocks can be installed in multiples of 6 pairs.

It is informally understood that the Bell System may consider the adoption of the 25-pair system at some future date. The Bell System has not, however, indicated as yet whether the smaller cables will be 6, 11 and 16, or 5, 10 and 15, or 6, 12 and 18.

Personally, we prefer the 25-pair system. We have never been able to understand how any benefit could be obtained by having odd pairs on a main frame protector strip or a cable terminal. By this we mean protector strips of 101, 202 or 303, and cable terminals of 11, 16 and 26 pairs. We are of the opinion that it is far easier to keep records straight when the protector strips are 100, 200 and 300 pairs, and the cable terminals 10, 15 and 25.

It is possible, however, that the multiples of 6 pairs are justified in the new "ready access" terminals. We would not like to condemn anything new since progress is obtained only by changing things we now have to something better.

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We have just received a very interesting telephone directory from D. E. McGregor, manager of the Nebraska Central Telephone Co., Gibbon. This directory covers the company's exchanges at Gibbon and Shelton. The front cover, in color, carries cuts of two colored handsets. The front section contains the alphabetical list, and the second section the yellow pages.

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It is claimed that experience is what we get from being inexperienced.

TELEPHONY'S Traffic Engineering Handbook

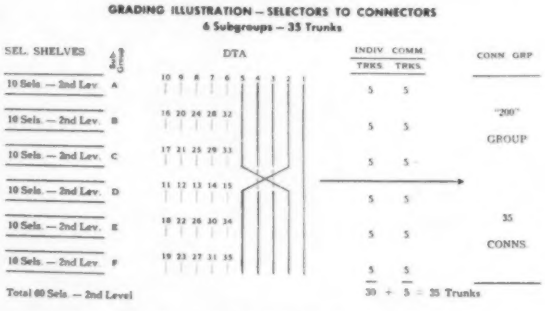
By Gilbert R. Brackett

May 3, 1958

Section 13 Continued

Graded Multiple

NOTE: This table further indicates the amount of traffic carried by the 10 contacts for a group of switches.


GRADING ILLUSTRATION – SELECTORS TO CONNECTORS
6 Subgroups – 35 Trunks
SEL. SHELVES
DTA
INDIV TRKS
COMM TRKS
CONN GRP
10 Sels. — 2nd Lev. A
10 Sels. — 2nd Lev. B
10 Sels. — 2nd Lev. C
10 Sels. — 2nd Lev. D
10 Sels. — 2nd Lev. E
10 Sels. — 2nd Lev. F
Total 60 Sels. — 2nd Level
"200" GROUP
35 CONNS.
30 + 5 = 35 Trunks

The total traffic carried is 149 CCS or an average of 14.9 CCS per trunk.

(1) This is assumed to be a line finder-selector-connector office.

(2) Traffic to the "200" connector groups from 60 first selectors, second level—requires 35 trunks to 35 connectors.

(3) As in normal practice, each shelf of 10 selectors has a straight multiple through the 10 terminals of the selector bank and from the last switch on each the outgoing trunks are wired to a terminal strip or block.

(4) On the Distributing Terminal Assembly (DTA), where each shelf of selectors straight multiple appear, each shelf is given five individual trunks and the five common trunks are then strapped through the banks as shown.

Graded Multiple Engineering

One problem of the traffic engineer is to arrange trunk paths in such a manner that they will be operated at the maximum possible efficiency for a desired grade of service.

Owing to limitations imposed in the design of certain types of equipment, it is not always possible to arrange the facilities so that all calls offered to a group of trunks have complete access to each trunk.

When such a situation exists, graded multiple is employed to improve trunk efficiency.

Selector switches are usually on shelves having a capacity of 10 selectors each. Twenty selectors are divided into groups of 10 each and the banks of each group of 10 are multipled together. Each set of 10 banks is generally wired to a distributing Terminal assembly (DTA) where it is possible to further multiple together, level by level, as many sets of 10 banks as may be desired, in order to provide proper loads for the outgoing trunk groups from selector levels. Since each level of a selector bank contains 10 contacts or outlets, each set of 10 selector banks may be provided with a maximum of 10 trunks per level. Also, two or more sets of 10 banks may be multipled together to share 10 trunks. This is known as "straight multiple" and results in a group of 20, 30, 40, etc., selectors hunting over a common group of 10 trunks.

Grading is a method of associating a number of selector bank groups (sets of 10) together in the distributing terminal assembly (DTA) so that the trunks from the levels are multipled in a manner that will give each group access to individual outgoing trunks in the early choices, but sharing access to trunks with other groups on later choices.

The essential characteristics of a graded multiple are: Trunks hunted over first serve a minimum number of switches, while those hunted over last are multipled before more or all of the switches. These multiple arrangements are applicable where distributing terminals (DTA) are provided. Graded multiple may be used on any type of trunks. The grading from a rank of selector outlets is carried out separately for each level. The starting point is the total number of selectors in that rank and the total traffic to be carried on that level.

TRUNKS	SELECTORS PER SUBGROUP																TRUNKS
	320		260		160		120		80		60		40		20		
	CCS CAPACITY PER																
	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	
10	.47	149	.63	150	.95	152	1.28	154	1.95	156	2.63	158	4.10	164	9.10	182	10
11	.52	168	.71	170	1.08	172	1.45	174	2.20	176	3.00	180	4.65	186	10.50	210	11
12	.59	188	.79	190	1.20	192	1.62	194	2.47	198	3.37	202	5.25	210	11.90	238	12
13	.65	208	.87	210	1.33	212	1.78	214	2.73	218	3.75	224	5.85	234	13.30	266	13
14	.71	228	.96	230	1.45	232	1.95	234	2.98	238	4.10	246	6.45	258	14.50	290	14
15	.77	246	1.05	252	1.56	250	2.12	254	3.23	258	4.33	266	7.00	280	15.80	316	15
16	.82	264	1.11	266	1.68	268	2.27	272	3.46	276	4.77	286	7.60	304	17.10	360	16
17	.88	282	1.18	284	1.80	288	2.45	294	3.73	298	5.15	308	8.20	328	18.20	364	17
18	.96	300	1.26	304	1.91	306	2.60	312	3.98	318	5.50	330	8.80	352	19.20	384	18
19	.99	318	1.36	322	2.09	334	2.77	332	4.25	340	5.90	354	9.45	378	20.80	416	19
20	1.05	336	1.45	362	2.15	344	2.93	352	4.50	360	6.27	376	10.10	404	-	-	20
21	1.11	354	1.50	360	2.27	364	3.08	370	4.77	382	6.63	398	10.75	430	-	-	21
23	1.22	390	1.69	396	2.51	402	3.42	410	5.32	426	7.60	456	12.20	488	-	-	23
25	1.33	426	1.80	432	2.76	438	3.75	450	5.88	470	8.17	490	13.25	530	-	-	25
27	1.44	462	1.95	468	2.96	474	4.08	490	6.44	515	9.00	540	-	-	-	-	27
29	1.56	498	2.10	505	3.19	510	4.42	530	7.00	560	9.92	595	-	-	-	-	29
31	1.67	535	2.27	545	3.44	550	4.75	570	7.56	605	10.75	645	-	-	-	-	31
33	1.78	570	2.44	585	3.69	590	5.13	615	8.12	650	11.50	695	-	-	-	-	33
35	1.89	605	2.58	620	3.94	630	5.46	655	8.69	695	12.40	745	-	-	-	-	35
37	2.00	640	2.75	655	4.22	675	5.79	695	9.31	745	-	-	-	-	-	-	37
39	2.14	685	2.90	695	4.47	715	6.17	740	10.00	800	-	-	-	-	-	-	39
41	2.25	720	3.06	730	4.72	755	6.54	785	10.69	850	-	-	-	-	-	-	41
43	2.36	755	3.19	765	4.97	795	6.87	825	11.25	900	-	-	-	-	-	-	43
45	2.48	795	3.35	805	5.25	840	7.25	870	11.87	950	-	-	-	-	-	-	45
	320		260		160		120		80		60		40		20		

NON-SPARED GROUPS									
TRUNKS	1	2	3	4	5	6	7	8	9
CCS CAPACITY	.6	5.4	16	30	46	64	84	105	126

Selector Multiple Table

TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett **May 3, 1958**

The load per selector is arrived at by dividing the amount of traffic for the rank, or division, to be on the selector group by the number of selectors in the rank, or division. From the proper table the number of trunks per sub-group for the traffic per selector is read off directly. Unless there are special considerations involved, the column with the largest group of selectors per sub-group is chosen.

The number of sub-groups is then determined by dividing the total number of selectors by the total selectors per sub-group.

Assume the total traffic in a division for a level is 2340 CCS and there are 960 selectors in the division:
2340 CCS ÷ 960 selectors = 2.44 CCS per selector.

Refer to the accompanying *Selector Multiple Table.* This particular load per selector (2.44) can be found in any of the columns upward of 80 selectors per sub-group and, as it is the larger, we shall choose sub-groups of 240 selectors, requiring 33 trunks per sub-group. Since there are four complete sub-groups of 240 in 960 selectors, the total number of trunks would be 4 × 33 or 132.

The use of graded arrangements makes it possible to retain the same number of selectors per sub-group for a number of engineering periods by varying the number of trunks to meet any change in the calling rate per selector. This is done by changing the strapping on trunks within the sub-group and selecting a plan of sub-grouping for the initial installation which permits variation in the calling rate per group. It is important that consideration be given to the future trend in calling rates so that the best plan is selected on the initial job.

Although the estimated loading for the current engineering period will determine the actual trunking for a job, an examination of selector loading for two or three periods hence may be desirable to determine the group size. Where there is doubt as to future loading, the sub-groups specified may allow growth for four trunks per sub-group without a change in group size.

In determining the number of selectors per sub-group, each vertical column of the table is examined. Where nearly the same number of CCS per selector is found in two different columns, the column showing the largest number of selectors is used, providing, of course, this number does not exceed the total selectors required for the office. By using the larger sub-group arrangement, more efficient sub-groups are obtained and the related grading plan lends itself more readily to the changes in the number of trunks to care for traffic fluctuations.

An example of the same number of CCS, 2.44 per selector, will be found in columns 80 and 240. Assuming 240 first selectors, the 80 arrangement would call for 3 sub-groups of 12 trunks each or 36 trunks, while the 240 arrangement would require 33 trunks with efficiencies of 16.5 CCS and 17.7 CCS per trunks, respectively.

In practice, this will not usually be the case, as there may be partially equipped sub-groups left over. There are several methods for dealing with partly filled sub-groups but either of the following two methods should care for most applications.

Select a smaller sub-group from table 6, having approximately the same CCS load per selector. Example: If, in the above case, there were 118 selectors in addition to the 960, a partially equipped sub-group of 120 on 17 trunks would be needed.

118 selectors × 2.44 CCS = 287.9 CCS which calls for 120 selectors on 17 trunks.

As an alternate, the total amount of traffic is read into the upper half section of the capacity sub-group and one trunk is added to the number obtained. In the same example, the amount of traffic is 118 × 2.44 CCS = 288 CCS. From the column of 240 selectors 17 and 1 for a total of 18 trunks is obtained—one more than was specified by the preceding method. (This procedure is recommended only for partly equipped sub-groups with not more than 25 per cent of the full number of selectors in the standard sub-group omitted.)

Should the CCS be less than 10 trunks will carry, refer the results to the "Non-graded Groups" table in the *Selector Multiple Table.*

If seven or less trunks are required to carry the traffic from left-over selectors, as indicated by the "non-graded group" table, refer to the table given below to determine the number of individual first choice trunks to be provided for the exclusive use of the left-over selectors. The remainder of the terminals are multipled to the corresponding terminals of the last division in the last full group.

Individual First Choice Trunks for Left-Over Selectors

Trunks Required for Left-over Selectors if in Separate Groups	Individual First Choice Trunk Required For Left-over Selectors
1	0
2	1
3	2
4	2
5	3
6	4
7	5

Example: 172 selectors with a CCS per selector of 2.18 would call for sub-grouping of 160 selectors on 21 trunks. 172 selectors × 2.18 CCS = 388 CCS.

In the 160 sub-group column of the *Selector Multiple Table,* 388 CCS calls for 21 trunks leaving 12 trunks not provided for.

12 selectors × 2.18 CCS = 26 CCS

(Section 13 will be continued next week)

The Human Side of Automation

Office automation can cause employe problems, too. Here an industrial relations executive tells how communications techniques can help solve most of those problems.

By THOMAS E. KIDDOO*

OFFICE automation runs a poor second to marriage when it comes to separating white collar girls from their jobs, but the girls don't know it. That is why that magic word automation, or, more precisely, electronic data processing, is more than a problem of methods and machines.

If the new system is to operate at maximum efficiency, especially during the critical initial phases, top management must tackle the human side of office automation.

As a major business forms manufacturer and in our role as systems consultant, we have encountered this aspect of automation hundreds of times. The word itself means many things to different people, but too often it conjures up some needlessly frightful images in the minds of office personnel.

The worst reaction to the resentments, fears, and misconceptions of automation is to ignore them entirely. This kind of attitude only magnifies apprehensions and allows problems to snowball to unmanageable proportions.

Top management must take the initiative in accenting the positive. The basic reasons for automating are good ones, namely to accomplish office tasks better, faster, and with fewer errors. But management must realize that many employes can't see the forest for the trees.

The first danger to morale and the success of a new system is employes' deep-rooted belief that automation separates workers from their jobs.

To counteract this, give full information before the new system is installed. Use all avenues of communication to tell what you intend to do, how it will be done, and when it will be done. Be frank in your disclosure of how many people will be involved and how you plan to reassign them.

Automation upgrades jobs. This is a provable fact in almost any company and it should be emphasized again and again. Undoubtedly there will be specific examples of this in your own operation—a typist, biller or checker who has stepped up to a bigger, more responsible job.

It's certain that your new office data processing system is going to eliminate jobs, but there is a great deal you can do to minimize the effect.

Taking normal office turnover into consideration there's a good chance your company won't fire anyone. Tell your employes this. Tell them how you'll fill future openings in other departments, created by turnover or expansion, by transferring employes from the department being automated.

Incidentally, you might be frank in explaining the turnover problem you have had the last several years in the department that is being automated. It's an accepted fact that Dan Cupid takes more girls from their jobs than all the Univacs and Ramacs that engineers can build.

In some cases it may be possible to inaugurate the new system at a time when office help is at a low point, due to normal turnover.

Workers who will move into new jobs should be individually briefed by their superiors on their new functions. In most cases, the office employe will be flattered by the individual attention and begin taking a real interest in the system and the part he or she will play in it.

Prior to individual briefings, the alert executive should arrange meetings with employes in small groups. Encourage each group to discuss the subject freely and ask questions. Under the light of this kind of discussion, automation needn't be a grim piece of conversation.

Utilize other methods of employe communication to tell the office automation story.

The employe magazine or newsletter and bulletin boards can be used to promote employe understanding before the changeover, and can keep selling employes on it afterwards.

Well before the system is inaugurated, these media can present diagrams of the workflow, photos of new office machines and forms which will be used, also articles which explain how new jobs created will require greater responsibility, more challenge, and fewer dull repetitive tasks.

When the new system has been in operation for a time, the report can be brought up to date.

Be specific. Employes enjoy reading about their new roles in the system. Show in-action photos of personnel at their new desks and new machines—bring the workflow diagram to life by sketching in the people functioning at each work station. Show how the faster, more accurate work of the automated department is used by and benefits other people in the company. This kind of approach promotes interest and helps everyone understand the other fellow's job.

It will show that far from being an instrument of mass unemployment, office automation enables the employe to work faster, and to produce more at lower cost.

*Mr. Kiddoo is Vice President—Industrial Relations of UARCO, Inc.

Teleprinted Communications . . . on the double!

The Kleinschmidt teletypewriter set sends teleprinted messages from tape at speeds up to 100 words per minute.
AT THE SAME TIME, on the same unit, the operator perforates and prints other messages for transmission.

Day after day, Kleinschmidt teletypewriters and related equipment at U. S. Army Communication Centers receive and transmit thousands of teleprinted messages. This tremendous communications traffic, accelerated by multiple-function Kleinschmidt equipment, developed in cooperation with the U. S. Army Signal Corps, flows smoothly and precisely. Both sender and recipient receive a teleprinted original, identical in every respect.

Since the century began, the Kleinschmidt name has been associated with every major development in teleprinted communications. Now a member of the Smith-Corona family, Kleinschmidt looks ahead to new attainments in broadening the field of electronic communications for business and industry.

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General Selects Iowa Exchange For Merchandising Test Town

THE EYES of the telephone industry are turned toward Washington, Iowa, for the month of May, to watch with deep interest a merchandising activity that General Telephone System has under way. It is the "Telephone Fair," with the entire community activated in a program which will make every Washington resident aware of the newest in telephone equipment and services.

The purpose behind the Telephone Fair is to use one community as a test town for a controlled depth study of merchandising and promotional techniques, and set up a plan that can be followed in all operating areas to increase telephone service and use.

"We have selected Washington," says Joseph Van Horn, president of General Telephone Co. of Iowa, "because it is a typically American town with a higher-than-average percentage of dial telephone users. We therefore, feel that the opinions of Washingtonians about our new equipment will give us a good indication of how other Americans will respond to it."

All the new telephone devices will be shown in a special trailer which will be parked in the town square beginning May 1. In the trailer the public will be able to see and test such new devices as the hands-free telephone, the Dial-a-Phone, the Sound Booster telephone, a complete range of color telephones, the Electronic Secretary, illuminated dial telephones, etc.

A community-sponsored dinner on the night of Apr. 30, initiated the program. More than 300 people, including top civic and state officials, attended the dinner.

The entire community is participating in the Telephone Fair, with retail merchants cooperating by using telephone backgrounds for store displays, fashion showings, window displays, etc. Community and fraternal organizations are scheduling telephone representatives as speakers for their meetings and lunches; schools are assigning telephone subjects for pupils.

Donald C. Power, president of General Telephone Corp., feels that this is one of the most important forward steps in the telephone industry. "For many years, the telephone industry has concentrated on the development of the finest instruments and communication systems" he said. "It is time now that we turned our attention toward merchandising our services in a way that will give the public the most possible service, and that we acquaint them with all of the services a telephone company offers.

"Equipment and facilities were once in short supply, and furnishing minimum service was the best that we could do; but with more equipment and facilities available, we should make every effort to increase the use of telephonic facilities available, and we should make every effort to increase the use of telephonic facilities to their maximum."

REA Approves $675,000 In Four Telephone Loans

ONE HUNDRED sixty-five rural families will receive telephone service for the first time, and about 1200 others will receive improved service as a result of $675,000 in loans approved recently by the Rural Electrification Administration, the U. S. Department of Agriculture announced on Apr. 22.

The following loans were approved:

Northern Iowa Telephone Co., Sioux Center; $220,000; Apr. 14.

The new borrower plans to furnish dial service to 517 rural subscribers, including 43 subscribers presently without telephone service.

The new borrower currently is operating with magneto service at Granville, serving 266 rural subscribers. It recently acquired two other magneto-operated companies, the Maurice Telephone Co. and the Reading Township Telephone Co. The borrower plans to acquire another, the Sherman Township Telephone Co., with loan funds. Both the Reading and Sherman systems currently receive switching service from the Maurice exchange. All three serve a total of 208 rural subscribers. Loan funds will also be used to reimburse the borrower for the Maurice and Reading Township acquisitions.

In combining all four systems, the borrower plans to build new automatic central office buildings at Granville and Maurice, and to sell the existing buildings when the construction is completed. Ross K. Vernon is president and manager of the Northern Iowa Telephone Co.

•

Western Illinois Telephone Co., Aledo, (mailing address: New London, Ia.); $255,000; Apr. 14.

These funds will be used by the company to improve service for 606 present subscribers, and to furnish initial service to 35 farm families. The existing subscribers are now receiving magneto service from the Mutual Telephone Co., Alpha, the Rio Telephone Exhange Co., and the North Henderson Mutual Telephone Exchange. The borrower proposes to acquire the first two exchanges at a nominal cost. It has recently acquired the North Henderson Exchange with general funds which are reimbursed in this loan. New automatic central offices are scheduled for Alpha, Rio, and North Henderson.

REA has approved a total of 1.649 million dollars in loans to this borrower which will enable it to furnish new and improved service to 5,082 rural subscribers. The system, when complete will consist of 12 automatic exchanges. Those at Aledo, Joy, Little York, New Boston, Oquawka, and Seaton are in operation. The three in this loan and those at Andover, Mathersville, and Preemption are yet to be cutover to automatic operation.

Elnathan Gates is president and A. H. Sanders is manager of the Western Illinois Telephone Co.

•

Lower Cape Fear Telephone Membership Corp., Elizabethtown, N. C.; $53,000; Apr. 14.

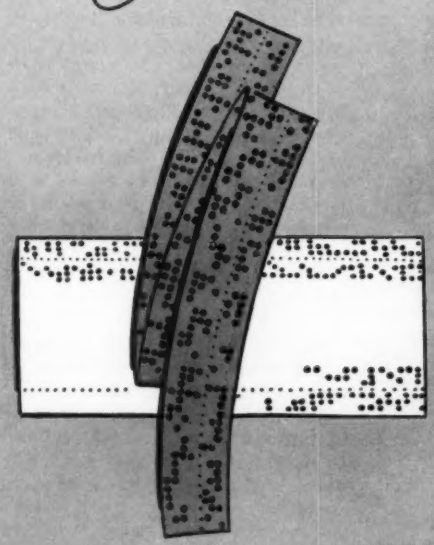
These funds will be used by the borrower to complete the previously authorized system and to provide for an increase in the proportion of private and semi-private lines.

The two REA loans, totaling $399,000, will make it possible for the borrower to provide new and improved service to 847 rural subscribers. The system will consist of exchanges at Abbotsburg, Lisbon, and White Oak which currently are in operation.

J. R. Powell is president of the Lower

(Please turn to page 56)

Are Your Filing Methods As Fast as Your Machines?



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City_____ Zone____ State_____

We Must Serve Well to Prosper,

We Must Prosper to Serve Well

By FREDERICK R. KAPPEL*

WHAT is the first thing expected of the telephone company? The answer is always—good service. Yet a few months ago, when someone asked me—"Which do you put first in your mind, service or profits?"—when I said that naturally I put service first, he seemed a little surprised.

This puzzled me until I reflected that for some years now, the telephone companies have repeatedly had to ask the regulatory commissions for increased rates; and with that in mind, my questioner had perhaps decided that our first interest is in money.

This cannot be. The function of the Bell System must be to serve the public and serve it well. But we can only serve by earning money—and enough money to keep ourselves in good enough financial shape to go ahead with research and to keep on making service improvements.

The whole matter can be put in two very short sentences. They are: We must serve well to prosper. We must prosper to serve well.

This may sound elementary. And the reasons why the Bell companies have had to increase rates are elementary also. We have been plagued by inflation just like everyone else. Our costs have gone up and are still rising. Wage increases alone have about equalled all the increases in Bell telephone rates since before the war.

What is not so elementary is the question, "Just how much should a telephone company earn?" I am going to state my view in a way which may not have ocurred to some. I think we should earn enough, so that in the long run, the cost of service to telephone users will be *lower* than if we earned *less*.

At first this may seem a bit of a paradox. But is it? Just consider: Only with good earnings can we conduct the business most efficiently. Only with ample resources can we push research in such a way that we will get better and more efficient equipment at the earliest possible moment. Only if we have enough money can we spend money in ways that will reduce the cost of service in the long run.

For instance, think of any community whose telephone needs are growing. A new central office that will meet those needs for a reasonable period ahead will cost more at the start than a smaller office that will only meet them for a very short time. But the smaller office will then have to be enlarged, and this will cost more in the end.

If we are so scrimped from year to year that we have to build piecemeal, this is bound to increase the cost of service in the long run. But, if we are financially able and free to do the right kind of job at the start, the average cost through the years will be less.

Under present conditions, I believe that earnings in the neighborhood of 8 per cent on the capital invested in the Bell System will give the best long-run assurance of excellent service at the lowest possible price. Such a return, incidentally, compares with average postwar earnings of more than 12 per cent by large manufacturing companies, with which the Bell System must compete for new capital.

However, we believe our earnings need not be as high as theirs, because the degree of risk in our business, while increasing, is not yet as great as in theirs.

Eight per cent is more than we earn today and more than most regulatory commissions have been willing to allow. If the principle I have set forth above is correct, why then have the commissions for the most part held telephone earnings down?

No doubt this is partly because many regulatory people have yet to be convinced that the thesis is sound. Moreover, the immediate cost of getting started is quite a hurdle to clear. If a low-earning company hasn't the money to invest in economies, it will have to have a rate increase to start the expenditures that will reduce costs. This means asking the public to pay now for future benefits.

And, for the regulator, the difficulty is compounded. For many years the habit of regulation has been more to apply restrictions than to take them away. There has grown up quite a body of belief that the way to keep rates low is to keep earnings low—even though this particular pudding has no proof. To depart from this dogma (I almost want to call it folklore) is not easy. To do it, the commissions must not only be convinced that the right course is to regulate up rather than down. They must also have the very considerable courage needed to take the political responsibility.

Yet, I am sure that just such courage is needed to give this country the best and most economical service in years to come. We, in the Bell System, have studied this matter carefully. We know that electric and gas utilities which earn relatively well give as good or better service—*at lower rates on the average*—than those which earn poorly.

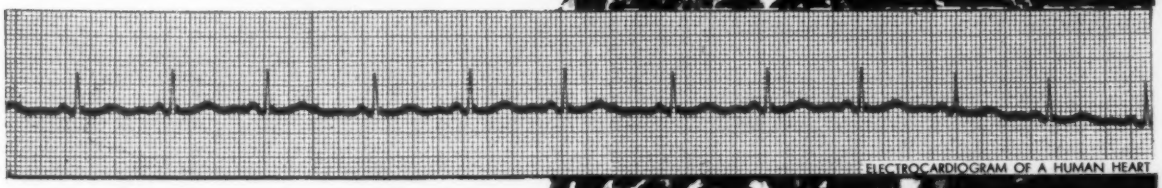
We know our own Bell telephone rates are lower on the average in states where earnings are better than average. I don't cite these examples as scientific proof, but they do suggest the possibilities in a little less restriction, a little more freedom.

There is no law I know of that prevents reasonable freedom under regulation. There is none that requires regulation to be timed or slow, or to put its reliance in technicalities. And, I want to say, that the Bell System is in no way opposed to regulation.

We are not merely not opposed to it, we are for it—and this is no lip-service. A business like ours, which doesn't have competition in the same degree as many others, has to be regulated. But this doesn't make us different from other people. We react to incentives and opportunity just as they do. We, too, need good earnings and ample resources to put in improvements and economies. We, too, need freedom—under regulation—to do our very best.

*This article by Mr. Kappel, president of the American Telephone & Telegraph Co. is reprinted with the permission of the *Christian Science Monitor*.

How do you take the pulse-beat



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Trees do not have heart attacks or a pulse affected by illness or exertion. But they do have a vital circulatory system and ailments with symptoms that are just as revealing to the skilled Bartlett Tree Expert as an irregular heartbeat to the physician. Proper diagnosis in either case often goes beyond the mere acceptance of symptoms. It may call for laboratory tests and scientific skills to verify conditions and determine causes. Only after careful analysis can proper treatment be prescribed.

Scientific tree care is available to you through your local Bartlett representative. These highly skilled technicians, with local knowledge, plus the backing of the Bartlett Tree Research Laboratories with its staff of nationally known scientists, are not only capable of accurate diagnosis but have the ability and equipment to carry the treatment to a successful conclusion.

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Home Office, Research Laboratories and Experimental Grounds, Bartlett School of Tree Surgery, Stamford, Conn. Local Offices from Maine to the Carolinas, and West to Indiana. See your Local Telephone Directory for Local Address.

Courts and Commissions

Louisiana Independent Gets Raise OK

The Louisiana Public Service Commission on Apr. 11 authorized a $12,000 yearly rate increase for the Reserve Telephone Co., Inc. (TELEPHONY, Nov. 23, p. 35). The Reserve company petitioned for an $18,259 raise in its original request.

The company's annual revenue for 1957 was $39,143.60. It serves 850 subscribers through exhanges at Reserve, Lions, Belle Pointe, Garyville, and Mt. Airy.

The newly authorized rates are as follows:

One-party business	$9.00
Two-party business	7.75
Four-party business	6.25
One-party residence	5.00
Two-party residence	4.25
Four-party residence	3.50

The REA has advanced $406,000 to the Reserve company out of an authorized loan of $500,000. The commission recently approved a request by the company to borrow $124,000 from REA to pay for additions to plant to serve new industries in the company's area.

The accounting staff of the commission examined the books of the Reserve company and reported that according to the books, the operations for the 12 months ended June 30, 1957 resulted in a loss of $679. The accounting staff made adjustments resulting in a reduction of operating expenses by $2,630 which gave the company a book profit of $1,951.

OK Tariff Amendments of Two New York Companies

The New York Public Service Commission on Apr. 24 accepted tariff amendments filed by the Fillmore Telephone Co. and the Western Counties Telephone Corp. (formerly Marathon-Killawog Telephone Co., Inc.), designed to increase rates effective May 1.

Service is provided to slightly under 1,000 telephone stations by the Fillmore company. The company is now engaged in the rehabilitation of its system and plans to convert to automatic operation early next year. Meanwhile, it has enlarged its switchboard facilities in order to render more adequate service.

In filing its new tariff, the company reported a substantial operating loss in 1957 and said that operating expenses for the next 12 months will increase further. It is expected that the additional revenues will produce about $9,000 annually.

The Western Counties Telephone Co. serves about 850 telephone stations.

In the past, the company rendered service through a two-position magneto switchboard in Marathon and a small unit in Center Lisle. It is now rehabilitating the system and expects to be able to convert to dial service by fall.

Meanwhile, in order that its subscribers may have more adequate service, it has replaced the magneto-type switchboard with a common battery board which will be retained in use until the conversion to dial service is completed.

In filing its new rates, the Western Counties company reported a substantial operating loss for the past year and said additional revenues were needed to provide it with sufficient funds to meet increased operating expenses and to finance the cost of plant improvements. It is expected that the new rates will produce about $15,500 additional annual revenue.

Complaint Dismissed on Bell Ad Rates in Pa.

The Pennsylvania Public Utility Commission has dismissed a complaint asking regulation of advertising rates in the Bell Telephone Co. of Pennsylvania's classified pages, it was reported on Apr. 10.

The commission told David H. H. Felix, a Philadelphia attorney, it lacks jurisdiction over rates charged by the utility for yellow page advertisements.

Ill. Company Asks Note OK

A hearing on Apr. 30 was scheduled by the Illinois Commerce Commission on an application by the Western Illinois Telephone Co., Aledo, for authority to issue $150,000 of first mortgage notes. The company filed the petition on Apr. 7.

Oregon Telephone Rate Increases Requested

A supplemental application for rate increases in Oregon totaling $225,000 a year was filed with the Oregon Public Utility Commissioner on Apr. 17 by the West Coast Telephone Co. of Everett, Wash.

The company said that its Feb. 13 filing for new tariffs in the amount of $600,000 per year "simply was aimed at too low a rate of return to attract the capital we need for anticipated expansions."

A statement by the company said it must have at least a 7 per cent return in order to meet its obligation to provide modern service to its Oregon customers. The statement noted that the $600,000 increase, if granted, would lift the rate of return in Oregon from an estimated 5.39 per cent to about 6.50 per cent.

"We inadvertently omitted certain components from our calculations in computing the original filing—an omission that would result in less rate relief than is absolutely necessary," the company statement asserted.

Two Companies Receive Rate Increases in Wis.

Wisconsin Public Service Commission on Apr. 18 authorized two telephone companies—Wisconsin Telephone Co. and General Telephone Co. of Wisconsin to put rate increases into effect.

The commission said its action will result in an annual rate increase for Wisconsin Telephone Co. of between $3,472,000 and $3,486,000 "depending upon the classes of service and exchanges to which the increases will be applied."

"This is about $1,820,000 less than the amount sought by the company," the commission order continued. "The increase in annual net operating income from $13,179,000 to $14,639,268 will provide a return of 6.1 per cent

(Please turn to page 34)

ROEBLING PAPER-LEAD TELEPHONE CABLE

Available in conductor sizes 19, 22 and 24 AWG . . . 6 to 909 pairs. Paper-taped conductors, with 1% antimony-lead sheath, and with additional protective coverings for special requirements.

ROEBLING PLASTIC TELEPHONE CABLE

Conductor sizes 19, 22 and 24 AWG . . . from 6 to 404 pairs. Light weight permits smaller messengers, longer spans. Conductors are polyethylene-insulated; sheath is high-molecular-weight polyethylene.

The weather's always perfect inside **Roebling Telephone Cable**

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EASY EXPANSION...

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HANDY EXTRA BANKS

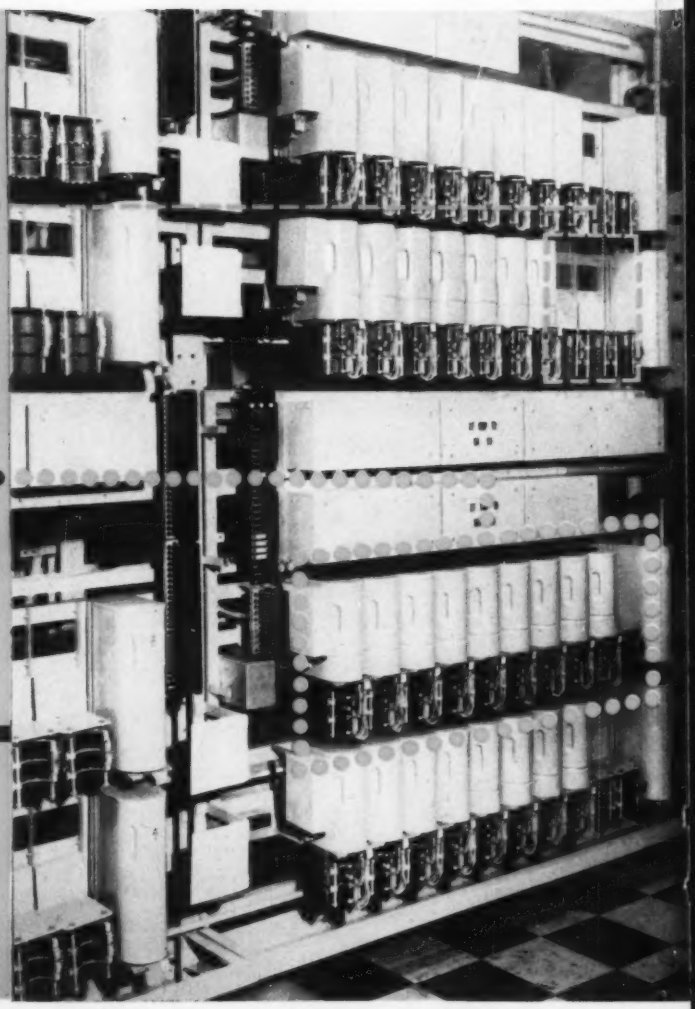
take care of moderate growth—just jack in another switch and you give a healthy boost to your traffic capacity!

PRE-WIRED SHELVES

handle larger expansion—simply slip them in place and connect a cable!

COMPLETE PRE-WIRED FRAMES

can be added for biggest growth requirements. There are no limits to Strowger expansion!



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In selecting central office equipment, the experienced buyer looks for a product that is *adaptable to future needs.* That's why so many telephone men choose Strowger Automatic. You see, Strowger equipment is assembled in small, self-contained units. The number of units can be easily increased to meet your traffic changes with a minimum of effort and expense. Whatever your demands, the simple circuits and unitized construction of Strowger meets them simply and economically.

BEFORE YOU INVEST, visit several Strowger exchanges. Ask the owners what expansion they've had...whether the job was easy and what it cost. Convince yourself. Then get in touch with us. We'll be glad to help you in any way possible. *Write Automatic Electric Sales Corporation, Northlake, Illinois. Or, call Fillmore 5-7111.*

AUTOMATIC ELECTRIC

A member of the General Telephone System—One of America's great communications systems

GENERAL TELEPHONE SYSTEM

on a net investment cost rate base of $239,988."

The commission granted General Telephone Co. a $96,311 increase. The company had requested $165,684.

Wash. Commission Urges Highway Relocation Aid

The Washington Public Service Commission recently passed a resolution dealing with reimbursement to utilities of costs for highway relocation.

After pointing out the unfairness of loading on to the utilities "this heavy financial burden brought about by the enormous highway program of the federal government. . . ," the commissioners resolved:

"That the Washington Public Service Commission does hereby urge the Legislature of the State of Washington to take under consideration during its 36th session the repeal or amendment of . . . . (existing pertinent laws) so as to permit the Washington State Highway Commission and the Washington State Highway Department to include the costs of removing and relocating the facilities of the utilities in the construction costs of the federal-aid highway projects within the State of Washington."

Nebraska Company Granted Tariff Revision Approval

The Nebraska Railway Commission on Apr. 8 authorized revisions in tariff regulations of the Central Nebraska Telephone Co., Blair, to provide for the following:

Monthly billing effective July 1 for all subscribers instead of a combination of monthly, quarterly and semi-annual billing. The present discount plan was changed to provide for a 25-cent discount monthly for all subscribers. Present net rates will remain unchanged. All rates for grounded service are eliminated.

The company proposes converting several of its exchanges to automatic operation. Effective with these conversions, a handset charge now applying to the first 40 months of use will be eliminated. Subscriber-owned telephones and rates for such telephones will be eliminated.

Color telephones will be offered at 25 cents per month in addition to regular rates.

Stock Offering in Nevada

Southern Nevada Telephone Co., Las Vegas, has filed with Securities & Exchange Commission 60,000 cumulative convertible preferred shares, $25 par, and 70,000 common shares $8.00 par, both to be offered publicly by an underwriting group headed by Dean Witter & Co., it was reported on Apr. 11.

The cutover to dial service went off on schedule March 16 for patrons of the Sterling and Alden exchanges of the Mid-Kansas Telephone Co. The cutover climaxed three and one-half years of planning and building which began with the purchase of the Sterling telephone system by Howard Culbertson in 1954. To celebrate the cutover to automatic operation, more than 800 registered at the "open house" March 21.

Lincoln (Neb.) T&T Seeks Waiver of Service Charges

The Lincoln Telephone & Telegraph Co. on Apr. 3 asked permission of the Nebraska Railway Commission to waive the change of equipment charge when a black telephone is changed to a color telephone. The company charges 25¢ per month additional for color telephones and the request is designed to stimulate the sale of color sets.

The company also asked permission to reduce the service connection charge applicable to Ericofon instruments from $25.00 to $5.00.

Florida Commission To Hear Two Rate Cases

A hearing on the petition of North Florida Telephone Co. for authority to adjust rates at its exchanges in Callahan and Hilliard is scheduled for May 13 before the Florida Railroad & Public Utilities Commission. Adjustments are to be effective at both exchanges upon completion of the base rate area expansion and rural line construction program which is planned to start around Apr. 1, 1959.

The commission has set a hearing on May 14 on the application of Starke Telephone Co. for an adjustment in its rates and charges.

Maine Company Asks Raise

The Hartland & St. Albans Telephone Co., Hartland, petitioned the Maine Public Utilities Commission for a rate increase, it was reported on Apr. 13. The Hartland company serves 580 subscribers and recently converted to automatic operation.

B. C. Telephony Company Seeks Rate Increases

British Columbia Telephone Co. applied on Apr. 12, to the Board of Transport Commissioners for Canada for permission to increase its exchange and long distance charges to meet increased costs.

The proposed increases would give the company some 6.4 million dollars, or 15 per cent, more in exchange and toll revenue, it was stated. Total operating revenues in 1957 were 41.3 million dollars.

United of West Asks Neb. Rate Increase

The United Telephone Co. of the West, Scottsbluff, has filed an application for a rate increase with the Nebraska Railway Commission, it was reported on Apr. 22.

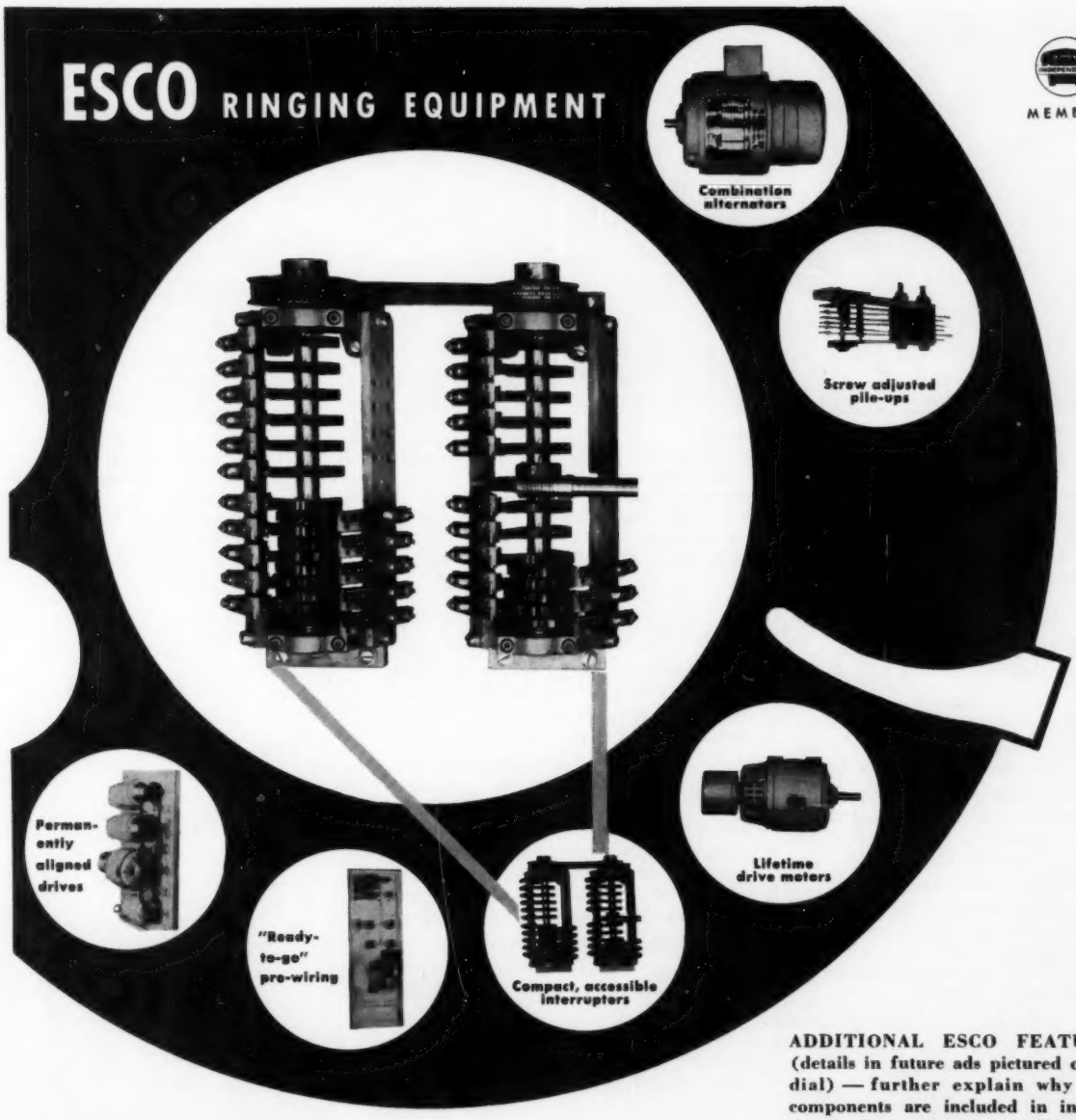
The company requested an annual increase of $176,952. It operates 10 Nebraska exchanges.

The petition noted that the company has not had a general rate increase in Nebraska since 1928.

OK Transfer in Kansas

The Kansas Corporation Commission on Apr. 9 authorized the Reno Telephone Association, Hutchinson, to serve the Murdock and Belmont areas after allowing David L. Green to cease operations there.

ESCO RINGING EQUIPMENT



MEMBER

ADDITIONAL ESCO FEATURES (details in future ads pictured on the dial) — further explain why Esco components are included in installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard and Supply Co., Leich Sales Corp., and Stromberg-Carlson Co.

UNIQUE INTERRUPTER DESIGN

. . . with the features that operating engineers want most!

You can expect more than ordinary performance from Esco interrupters for a number of exclusive design reasons. First, Esco interrupters are designed to allow more cams and circuits with a single set of driving gears. But these unique interrupters are also more accessible. Pile-up are mounted at an angle in relation to the base. This inovation gives wider clearance for easier, surer inspection of contacts, terminals and wiring.

For longer life and lower up-keep, Esco interrupters are equipped with nylon cams, followers and actuators. This material, with its excellent wearing qualities, has an outstanding record in these applications. Another point — cams are secured to the shaft with a set screw and a key. This extra feature assures permanent positioning and accurate timing.

Practical features like these are only some of the reasons why Esco Ringing Equipment is preferred by so many equipment engineers and suppliers. Full information is yours on request. Write for free booklet.

Write today for full information

ELECTRIC SPECIALTY CO.
176 South Street, Stamford, Connecticut

LEFT PHOTO: There's plenty of topic for discussion as visitors to the open house of the Northwestern Telephone Co., Freeport, Ill., examine the new automatic equipment which went into operation on Mar. 29, at the company's Freeport and Cedarville exchanges. The Freeport installation, consisting of 6,000 lines and 12,100 terminals is served by a 16-position toll board, manufactured by Automatic Electric Co. RIGHT PHOTO: Operators are shown at the new board which features a total of 96 toll circuits. Freeport is the long distance toll center of nine of the company's 16 exchanges as well as for five other independently owned exchanges. The Cedarville exchange is a 150 line 500 terminal-per-station office with EAS service to Freeport. Numbers for both exchanges were changed to fit into the 2-5 nationwide numbering system.

Ill. Company Gets Rate Raise OK

The Illinois Commerce Commission on Apr. 10 granted a rate increase to the Intra State Telephone Co., Galesburg, (TELEPHONY, Mar. 8, p. 41).

The commission set the reproduction cost new less depreciation of the company's physical property at $5,699,345. To these figures, the company added $140,000 for materials, supplies, and cash working capital. The original cost less depreciation reserve of the company's physical plant was set at $4,-565,501. To these figures the company also added the $140,000.

The new rates, it is estimated, will result in a gross revenue increase of $361,404.

After giving effect to the proposed increases in revenues and expenses of the company, the amount available for interest and return is $266,068.

The Intra State company introduced evidence on cost of money by an expert witness who stated that, in his opinion, the fair rate of return for the company should be 7 per cent on the fair value of its property, based on a 50-50 weighting of reproduction cost new, less depreciation, and original cost less the depreciation reserve.

Deny Bell North Dakota Rate Increase Request

The North Dakota Public Service Commission on Apr. 21 unanimously denied a rate raise request by Northwestern Bell Telephone Co. (TELEPHONY, May 11, 1957, p. 38).

In its order, the commission said it found "the rate of return now being earned by the company on its North Dakota intrastate operations is near the upper limit of the zone of reasonableness."

E. W. Benser, Northwestern Bell vice president, and general manager for North Dakota, said that present rates were set four years ago and that costs have gone up sharply since then. He said the company has invested 12 million dollars for improvements and that wages have increased by $900,000.

The commission noted that the Northwestern Bell company had requested a rate increase of $89,600 monthly.

The commission said that this would increase the company's earnings after taxes $41,300 per month. Northwestern Bell's rate of return in North Dakota for 1956, according to the commission, was 6.38 per cent of its investment.

West Coast Company of Cal. Requests Rate Increases

George McBride, district manager, for the West Coast Telephone Co. of California, on Apr. 10 cited increases in wages, taxes and other operating costs, as well as the effect of inflation, as the reason for filing an application with the California Public Utilities Commission for increased rates.

During a period of continuous increases in the price of services and commodities, Mr. McBride explained, telephone rates in Crescent City have remained unchanged since 1952.

Present and proposed rates for Crescent City are as follows:

	Present	*Proposed*
Business:		
One-party	$7.75	$13.00
Residence:		
One-party	4.75	7.50
Four-party	3.25	4.65

Obituaries

WALLACE L. COOK, 78, chairman of the board of Reliable Electric Co., Franklin Park, Ill., and of Whitney Blake Co., New Haven, Conn., died on Apr. 26 in Chicago.

W. L. COOK

Mr. Cook was born on Oct. 11, 1879, in Sioux City, Ia., the son of S. D. Cook, a newspaper publisher, and Alice Brown Cook. Wallace Cook attended Iowa University, class of 1900.

Mr. Cook began his career as engineer with American Electric Telephone

(Please turn to page 40)

You pay a 10% federal excise tax on your telephone bill

This tax is discriminatory because you pay it on no other essential household utility. Levied in 1941 to conserve critical materials in wartime, the tax has outlived its purpose. We think it should be repealed. A more equitable tax system ... not necessarily a reduction in federal revenues... is needed today. We believe your Congressmen will be interested in your views on the telephone excise tax.

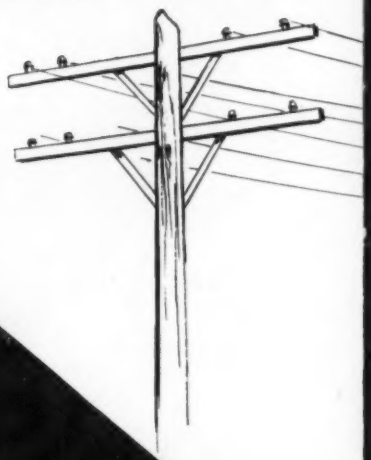
INDEPENDENT TELEPHONE COMPANIES

helping you reach all America

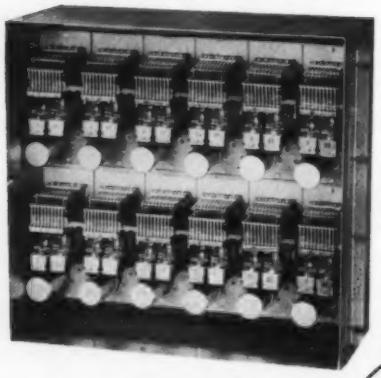
United States Independent Telephone Association, Pennsylvania Building, Washington, D.C.

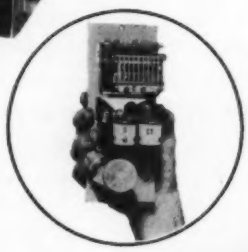
This 45th USITA national ad to appear in May 12 Time and May 23 U.S. News and World Report.

For *Modern* Party Line Operation →



Typical relay case
for Ringing Converter





Relative size of
unit assembly of
Ringing Converter

The UNIVERSAL
Code-to-Selective Ringing
Converter employs
simple circuits with the
magnetic impulse counter,
together with other
standard relay apparatus
of recognized
manufacture.

Other UNIVERSAL Telephone Equipment:
UNIVERSAL COMPUTER INTERCEPT
DIGIT ABSORBER for 2-5 Numbering

INDEPENDENT

"EASY TO INSTALL" UNIVERSAL RINGING CONVERTER!*

MODERN SERVICE DEMANDS SELECTIVE RINGING

Selective ringing has become a "must" to maintain customer relations, but the cost of modification of earlier dial units to full selective ringing is often excessive . . . in material, engineering and especially for the installation. The UNIVERSAL Code-to-Selective Ringing Converter unit is a simple applique circuit which places the majority of the wiring modification on a factory basis, thus reducing the installation time to a minimum. Most installations can be performed by maintenance personnel. Your company will benefit from increased revenue that can be expected with selective ringing because of increased station rates and increased party line fill.

TELEPHONE DIVISION

UNIVERSAL
CONTROLS CORPORATION
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MAIL ADDRESS – P. O. BOX 13122, DALLAS 20, TEXAS

KELLOGG
A DIVISION OF I T & T

6650 S. CICERO, CHICAGO 38, ILLINOIS

SALES OFFICES

5924 S. PULASKI RD.
CHICAGO 29, ILL.

1515 TURTLE CREEK BLVD.
DALLAS 7, TEXAS

4501 TRUMAN ROAD
KANSAS CITY 1, MO.

1555 WEST FOURTH STREET
MANSFIELD, OHIO

23 BRODERICK ROAD
BURLINGAME, CALIF.

1594 SOUTHLAND CIRCLE, N. W.
ATLANTA, GA.

6100 EXCELSIOR BLVD.
MINNEAPOLIS 16, MINN.

165 PROSPECT STREET
PASSAIC, N. J.

*Pat. Pend.

Mail this coupon to the nearest address.

Gentlemen: I am interested in your Universal RINGING CONVERTER

Name_____

Position_____

Firm_____

Address_____

City_____ State_____

T-5-3

Co., in Chicago in 1902. From 1903 until 1913 he was with Western Electric Co., in equipment engineering and railroad sales.

In 1913 Wallace Cook bought an interest in the struggling Reliable Electric Co., a manufacturer of telephone outside plant equipment. He became its president in 1918 and chairman of the board in 1940. The company, which now serves both the telephone and power industries, last year moved into a modern all air-conditioned 165,000-square-foot plant in Franklin Park.

Mr. Cook was married to Maryethel Lemmon of Indiana, Pa., in 1905. She died in an automobile accident in California in 1938. Mr. Cook in 1938 bought an interest in the Whitney Blake Co., of Hamden, Conn. As board chairman he spent much of his time in the next few years in Connecticut where he was active in the direction of this wire and cable manufacturing business. He also helped organize an affiliated company, Koiled Kords, Inc.

Mr. Cook was an authority on lightning protection and for many years was a member of committees to guide the railroads and the National Board of Fire Underwriters on their standards. He was also a member of the American Institute of Electrical Engineers.

Wallace Cook was a founding member of the Cook Foundation of Hamden, Conn., which provides a continuing fund to help meet the need for charitable contributions and for college scholarships in the Whitney Blake Co. and Reliable Electric Co. communities.

Mr. Cook leaves his son and daughter-in-law, Mr. and Mrs. John Brown Cook of New Haven, and their two children, Marcia and Gregory.

•

CARROLL S. DUDLEY, 68, general manager of the Cato & Meridian Telephone Co., Cato, N. Y., died on Apr. 18. He suffered a coronary thrombosis as he was leaving his office and died almost immediately.

Mr. Dudley served as a director of the New York Telephone Association from 1947 through 1949. He was also a member of several active committees of the association throughout his career in the telephone industry.

He was born at Meridian, N. Y., and attended Meridian Union School and Syracuse Central High School. Mr. Dudley received his degree in mechanical engineering from Cornell University in 1913 and then went to work for the New York Telephone Co. at Binghamton and Elmira.

In 1918 he enlisted in the Army and served in the Signal Corps of the Rainbow Division in France and Germany. After his discharge, he was employed by Franklin Motor Car Co. both in Syracuse and in Detroit, Mich.

On Jan. 25, 1926, he returned to his home town of Meridian and began his career with the small telephone exchange which served the village and the surrounding territory. Under Mr. Dudley's guidance, the small company grew and acquired the several exchanges which now comprise the Cato & Meridian Telephone Co. At the time of his death, besides being general manager of the company, Mr. Dudley was also a director.

He is survived by his wife, Mrs. Luella I. Dudley, of Meridian; a son, David A., who is a teacher at Monson (Mass.) Academy; a brother, Walter B. Dudley of Katonah, N. Y.; and a sister, Mrs. Helen D. Sayles, also of Katonah. Another son, Carroll S. Dudley Jr. was killed at the age of 19 while serving in the Armed Forces during World War II.

P. M. Ferguson Honored For Long Service To Company

P. M. Ferguson Sr., president of the Mankato (Minn.) Citizens Telephone Co., and veteran Independent telephone industry leader, was feted on Apr. 10 at a testimonial dinner honoring him on his 50th anniversary of service with the Mankato Citizens company.

Approximately 165 long-time friends, company and city officials, and associates in the telephone industry, and their wives gathered to pay tribute to Mr. Ferguson. Representing the telephone industry were Mr. and Mrs. P. H. Finnegan of St. Paul, Minn.; Jay Houghtaling of Minneapolis; Paul Glaeser of Waconia, Minn.; Sherman Brooks of Minneapolis; T. C. Macoubrey of St. Paul; Harvey Knutson of St. Paul; James Pfaender and R. C. Reno, both of Chicago; C. F. Marvin and C. F. Marvin Jr., both of Zumbrota, Minn.

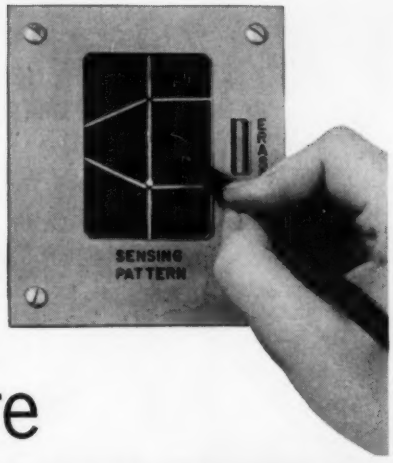
Serving as master of ceremonies at the dinner was Richard L. Myers, treasurer and director of the Mankato Citizens company. The "This Is Your Life" television program format was utilized effectively to introduce the guests honoring Mr. Ferguson.

Mr. Myers and others speaking on the program traced Mr. Ferguson's life from his birth in 1885 in Glasgow, Scotland, through his settlement in

(Please turn to page 43)

Among the 165 persons who paid tribute to P. M. Ferguson Sr. upon the completion of 50 years service with the Mankato Citizens Telephone Co. are those pictured above with Mr. Ferguson. Left to right: P. M. Ferguson Jr., general manager of the Mankato company; R. L. Myers, treasurer and director of the company; George Pass, director; Mayor Rex Hill of Mankato; Mrs. P. M. Ferguson Sr.; P. M. Ferguson Sr., and Joe Rassieur, representing the Mankato company employes.

Write a numeral here



and read it here

on new Bell Labs machine

A new device invented at Bell Laboratories "reads" a numeral while it is being written and instantly converts it into distinctive electric signals. The signals may be employed to make a numeral light up in a display panel, as above, or they may be sent to a computer or to a magnetic "memory" for storage.

The writing is done with a metal stylus on a specially prepared surface. Two dots, one above the other, are used as reference points. Seven sensitized lines extend radially from the dots. Transistorized logic circuits recognize numerals according to which lines are crossed.

The concept of a number-reader has interesting possibilities as a new means of communication from humans to machines. For example, in an adjunct to a telephone, it might provide inexpensive means of converting handwritten data into signals which machines can read. The signals could be transmitted through the regular telephone network to a teletypewriter or computer at a distant point. In this way, a salesman might quickly and easily furnish sales data to headquarters, or a merchant might order goods from a warehouse.

Tom Dimond, a B.S. in E.E. from the University of Iowa, demonstrates an experimental model of his number-reading invention. A similar device can also be made to read alphabetical characters. Small size and low power requirements result from transistor circuitry.

Modern communication involves many more fields of inquiry than the transmission and reception of sound. The experimental number-reader is but one example of Bell Telephone Laboratories work to improve communications service.

BELL TELEPHONE LABORATORIES
World Center of Communications Research and Development

Gerald C. Gaydos, Inside Sales, Chicago, and friend find it's a beautiful day in Chicago.

He's lionized on Michigan Boulevard

Gerry Gaydos of our Chicago branch office doesn't care about being a social lion. But he feels like roaring with pride at the way you're lionizing the construction and maintenance supplies he helps distribute.

Along Michigan Boulevard and many a Main Street you've shown that you appreciate the care we take with your supply orders; the speed with which we deliver (overnight to many locations); the personalized attention you get on your smallest orders. And since we have a lion's share of experience in telecommunications, you can be sure we understand your problems and know how to help you solve them.

If you haven't yet made the acquaintance of our supply organization, you can get lost in a jungle of claims and counterclaims. But there's no need for it. Simply place your supply orders with the Stromberg-Carlson branch office in your area, then sit back and relax with complete assurance that they will be serviced quickly, correctly, and with our sincere appreciation.

In Chicago our Sales Office and Warehouse is located at 564 W. Adams St. Phone: STate 2-4235.

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

Electronic and communication products for home, industry and defense

St. Paul with his parents at the age of four, to his present status as president of the largest Independent telephone company in Minnesota.

William C. Blethen vice president of the Mankato company, presented Mr. Ferguson with a hi-fi phonograph.

Mr. Ferguson began his career in the telephone industry in 1900 at the age of 15, when he became office boy for B. L. Freedy, then manager of the Northwestern Telephone Exchange Co. in St. Paul.

Soon, Mr. Ferguson was transferred to the installation department.

After successive promotions to P.B.X. installer and P.B.X. trouble-shooter, Mr. Ferguson was placed in charge of P.B.X. trouble-shooting. While holding this position, he received a call from C. H. Edwards, a former manager of the St. Paul company, who had gone into the Independent field as manager of the exchange at Mankato, Minnesota. Mr. Ferguson accepted the offer of Mr. Edwards, and on October 15, 1907, left the employ of the Bell company to take over duties as wire chief at Mankato. In 1909, Mr. Edwards decided to return to St. Paul and Mr. Ferguson was selected as general manager. Several years ago in addition to general manager, he was elected president, which position he holds today.

His son, P. M. Ferguson Jr., who joined the company following service in World War II, a few years ago succeeded his father as general manager.

Under the leadership of Mr. Ferguson Sr., the Mankato company has grown steadily. In 1918, after purchasing the competing Bell exchange, the company had two exchanges and served approximately 3,670 telephones; today it operates 16,000 telephones and eight exchanges.

Outside his own company, P. M. Ferguson Sr., has been prominent also in the activities of the Independent telephone industry. He has at various times been treasurer, president and a director of the Minnesota Telephone Association, and a director and member of the executive committee of the United States Independent Telephone Association.

In his home community Mr. Ferguson, throughout his residence there, has been active in many organizations devoted to civic betterment.

Offers Bonds in Canada

A $1,750,000 offering of Northern Telephone Co. 5¼ per cent 20-year sinking fund debentures, non-callable for 10 years, is being made at par by Royal Securities, it was reported on Apr. 12. The company's headquarters are in New Liskeard, Ontario.

General Telephone Corp. Holds Annual Meeting

The annual meeting of General Telephone Corp.'s shareowners was held on Apr. 16 in the new plant of the Automatic Electric Co., General's principal manufacturing subsidiary, at Northlake, Ill. A large number of shareowners living in the Midwest attended the meeting, and many inspected the factory and the General Telephone Laboratories following the session.

Directors elected for the ensuing year were: Thomas A. Boyd, Harold V. Bozell, Carl D. Brorein, Sr., Edwin F. Chinlund, Nelson J. Darling, Jr., Robert A. Gantt, Theodore S. Gary, George E. Jones, Herbert L. Nichols, Donald C. Power, John B. Prizer, F. S. Spring, Russell B. Stearns and Gardiner Symonds.

The shareowners approved proposals of the management to increase the maximum number of directors authorized by the charter from 15 to 21 and to increase the number of authorized shares of common stock and preferred stock to 25 million and 1½ million, respectively; also a technical reduction in the capital of the corporation upon conversion of preferred stock into common stock.

Following the transaction of regular business, Donald C. Power, president of the corporation, discussed the system's progress for 1957 and outlined some of the important objectives for 1958.

At the organization meeting of the board of directors after the annual meeting, the following officers of the corporation were elected: Donald C. Power, president; Thomas A. Boyd, executive vice president—administration; Leslie H. Warner, executive vice president—manufacturing; Theodore S. Gary, vice president; L. E. Lattin, vice president; F. E. Norris, vice president—planning and development; R. Parker Sullivan, vice president—merchandising; Jacob B. Taylor, vice president—finance; W. G. Wright, vice president—operations.

Also Robert F. Briggs, secretary; Ralph D. Heusel, treasurer; Raymond E. Dolar, controller; C. T. Downey, assistant secretary; H. H. Howlett, assistant secretary; Sherman C. Wilcox, assistant secretary; G. Robert Howard, assistant controller.

Can't Blame the Weather

Bad driving conditions prevailed in less than 15 per cent of the fatal highway accidents in the U. S. in 1957.

A roaring success: TELEPRENE by Whitney Blake

About 12 years ago Whitney Blake Company introduced TELEPRENE, one of the first neoprene jacketed drop wires offered to the Independent Telephone Industry. Before TELEPRENE, the average life of a drop wire was seven years. The first TELEPRENE drops were installed about 12 years ago and are *still in service* showing no appreciable signs of deterioration.

A "cheap" wire that needs frequent replacement, that causes service interruptions, calling for emergency service, is far from cheap . . . it is the most expensive wire you can buy.

It is now, and always has been, the policy of Whitney Blake to make *better*, not *cheaper*, wire. The same high quality is built into every product bearing the Whitney Blake name.

When you need drop wire, be sure to specify TELEPRENE by Whitney Blake.

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A DIVISION OF GENERAL DYNAMICS CORPORATION

SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

Helpful Literature

AUTOMATIC MOBILE TELEPHONE—A fully automatic mobile radio-telephone system, installed at Branford, Fla., by the North Florida Telephone Co., Live Oak, Fla., is the subject of a feature article in the current issue of the *General Telephone Technical Journal*. Developed by the General Telephone Laboratories to conform with REA specifications, the pilot system utilizes two types of subscriber equipment—mobile equipment and fixed rural subscriber equipment.

In addition to providing mobile telephone service, this system was designed to provide the same service as a regular rural wire party line to isolated ranches, farm houses, and islands now without telephone service. Ten subscribers can be selectively signaled, or 20 can be accommodated on a semi-selective ringing basis. With relative ease, the article states, the installation can be arranged to handle 20 users on a fully selective ringing basis. Control equipment used in this system was manufactured by Automatic Electric Co.

Calls can be initiated from and received on both land line and mobile instruments through a base station at the central office. While the system was designed to work satisfactorily into the present automatic system—and ultimately into nationwide toll dialing—toll calls are now going through an operator. Request HL399.

•

BATTERIES—C & D Batteries, Inc., has just released a new bulletin covering the use, design, and construction of the company's new line of explosion-proof Slyver-Clad® batteries for all applications.

The C & D explosion-proof battery can be used without danger of explosion in locations where flammable gases or vapors are present and also in atmospheres containing gasoline, hexane, naphtha, benzene, butane, propane, alcohol, acetone, benzol lacquer solvent vapors, or natural gas, the company says. In addition, according to C & D, one model of the battery has an interchangeable, locking safety panel which provides no-spark cable connect-disconnect protection. C & D grants a trade-in allowance on this locking unit. Request HL400.

•

RETRACTILE CORD CATALOG—A revised catalog with several innovations, has just been published by Koiled Kords, Inc., manufacturers of retractile cords for communications.

The revisions in the catalog involve a simplification of the tabular matter giving types, sizes, and colors available. The company points out that the form in which this material is presented is designed to simplify the selection and ordering of the retractile cords best suited to the needs of the customer. Included in the 16-page booklet are illustrations showing a variety of applications for retractile cords. In the catalog section the many sizes and types of power cords and other standard items are listed. Request HL401.

•

STAPLING PRODUCTS—A complete listing of the company's new products

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation further information on the products described in the following numbers:

HL399_____; HL400_____; HL401_____; HL402_____;
HL403_____; HL404_____; HL405_____; HL406_____;
HL407_____.

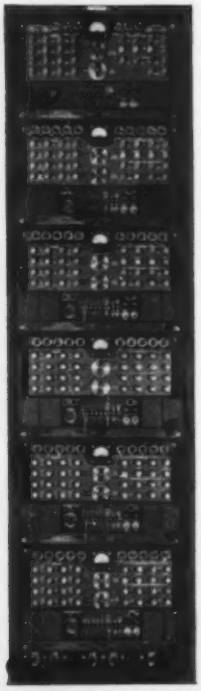
Name.....Title.....

Company.....

Street.....

Town and State.....

5/3/58



MINIATURIZED CARRIER TELEPHONE SYSTEMS FOR RADIO AND 4-WIRE CABLE

FOUR OR 24 CHANNELS

Two miniaturized voice-multiplex systems providing four or 24 voice channels over radio or 4-wire cable are available. They have many advantages over earlier designs: high performance, small size, light weight, low cost, circuit simplicity, low power requirements, small number of tubes of a single type only, low operating cost, low maintenance and high reliability.

These systems provide a voice-channel flat within 1 db from 300 to 3500 cycles, for each 4 kc of bandwidth occupied. Each channel is equipped with hybrid, signalling, and dialling circuits for all the standard 2-wire and 4-wire loop options.

The basic unit provides an order-wire and 4 carrier-derived channels. These units can be stacked in groups of 2, 3, 4 or 5 by means of a group modem to provide 9, 14, 19 or 24 channels. Full flexibility is provided for dropping and inserting channel groups at repeater and terminal points. Moderate lengths of 4-wire cable or open-wire line may be inserted between the multiplex equipment and the radio terminals.

24-channel carrier-telephone terminal complete with hybrids, ringing and dialling circuits, and test facilities. Dimensions are 58" high, 16" wide and 8" deep. Power input 250 watts. Weight 326 lbs.

RADIO ENGINEERING PRODUCTS
1080 UNIVERSITY ST., MONTREAL 3, CANADA
TELEPHONE UNiversity 6-6887
CABLES RADENPRO MONTREAL

is offered in the latest catalog of the Arrow Fastener Co., Inc.

Descriptions and prices are given for Arrow's new hammer tacker, and utility, desk, four-way standard, and heavy duty industrial stapler and automatic staple guns, as well as for others. Request HL402.

•

POLE TREATMENTS—Page & Hill, Inc., has just published a 1958 progress report on their pentachlorophenol pole treatments. This report details 10 examples with illustrations of penta treatment including such samples as western red cedar posts exposed in a tunnel in the Minneapolis area and fir heartwood planks in a splash board on a power dam in southern Wisconsin.

Each example discussed includes such data as material, treatment, exposure, conditions on several inspections, retentions, incising, sampling, and a conclusion.

The end section of the report discusses the conclusions reached under the subheadings of the permanence of pentachlorophenol, toxicity, the inhibiting power of pentachlorophenol to deteriorating fungi and termites, soil conditions, form and distribution, the rate of loss of distillate and the deposit of Penta in western red cedar. Request HL403.

•

STATIONARY BATTERIES—Detailed specifications and installation data for a new lightweight Kathanode battery are contained in a 12-page catalog issued by the Industrial Division of Gould-National Batteries. Designed to help industrial battery users in selecting stationary batteries for switch gear, alarm system, telephone control, signalling, emergency lighting, and other services where batteries are used for standby power, the bulletin carries complete data on all cells from 50 ampere hours to 1140 ampere hour capacity cell.

Engineering specifications tabulated included ampere hour capacity, discharge rates, overall cell dimensions, weight per cell and electrolyte required. In addition to illustrating the various properties of the compact Plastrite jar, an exposed view of the Kathanode cell shows battery components and new design features.

According to the manufacturer, the new jars are lighter in weight than conventional containers and save 30 to 40 per cent floor space, permitting increased battery room capacity and reducing storage rack requirements.

Concise installation data is given with recommended dimensions for storage racks in two-step, three-step, and double

Telephone duct goes down faster, easier, when it's

BERMICO®

FIBRE CONDUIT

Lays faster than other duct with less labor. Lightweight 8-foot lengths easily cut and tooled on the job speed installation. No alignment problems. No bandaging, compounds or other adhesive materials required.

Complete line of fittings quickly solve the most difficult installation problems. Bends, Elbows, S-Bends, Curved Segments, Angle-couplings, Plugs, Caps, Manhole Bells, Flexible Duct, are available.

Smooth inside bore for quick, easy "pull throughs" without danger of abrasion. Precision-milled tapered joints are sealed tight with a few hammer taps.

Waterproof — strong — acid resistant. This tough cellulose fibre conduit is thoroughly impregnated with coal tar pitch, making it exceptionally waterproof, durable and chemically inert. Concrete usage is cut to a minimum utilizing removable vertical separators.

BROWN COMPANY

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Mills: Berlin, N. H.; Corvallis, Ore.

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Offices in principal cities

tier construction. Scale drawings show rack construction. The discharge characteristics of the DKR, EKR, and FKB cells are included in graphical form. Request HL404.

•

PREVENTION OF FALLS—Safe-T-Claw, a product of the P-C Corp. is designed to prevent safety belts from slipping and thus help eliminate the major cause of lineman injuries.

Safe-T-Claw steel calks grip poles at any angle and hold without tension, thus reducing the need for manipulating of straps, the company states. It enables linemen to change positions easier and more safely and can be used with either single or double straps. A booklet giving prices and describing all of Safe-T-Claw's features is available. Request HL405.

•

TRUCK BODIES—Holan Corp. of Georgia has just published a four-page brochure about its new Mark C all-purpose commercial service bodies.

The brochure shows bodies applicable to ½- to 1½-ton chassis. Request HL406.

•

The Art and Practice of "On-the-Spot" Bending, is the title of a new eight-page book just published by National Electric Products Corp. for electricians and other users of the firm's portable one-piece NE-Redege Benfield bender.

The illustrated, pocket-size book—authored by the tool's inventor Jack Benfield—outlines correct bending techniques for both the Redege Standard and "Powr-Jack" (with new booster step) models.

Unique feature of the book is a shrink table developed by Mr. Benfield for 3-bend pipe saddle installations. The table—believed the first ever developed—provides the allowance for shrink of all sizes of conduit when objects being saddled range from 1 to 4 inches in diameter.

Discussed in detail is each aspect of the four fundamentals of bending MVC-1 Sherarduct, electrical metallic tubing and other rigid steel conduits from ½ inch to 1¼ inches in size.

The four bending fundamentals are explained as:

(1) Accurate stub lengths.
(2) Precision back-to-back bends.
(3) Perfect offsets.
(4) Exact "three-bend" pipe saddles.

"How to" information, take-up tables as warranted, and pertinent dimensional data are related to each fundamental. Request HL407.

IT&T Consolidates All Research In One Division

Consolidation of all United States research and development activities of International Telephone & Telegraph Corp. into a new division to be called IT&T Laboratories was announced on Apr. 11 by Edmond H. Leavey, IT&T president.

HENRI BUSIGNIES

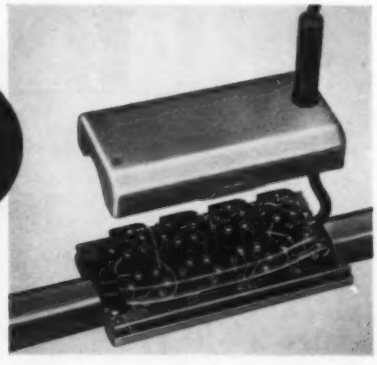
"This new organization will direct all work in our several American laboratories," Leavey said. "It will handle all electronics and communications research assignments originating from IT&T's operating divisions, industry, the military services and other government agencies.

"More effective utilization of, and opportunities for, the talents of our scientists and engineers, many of whom are working on vital communications, missile and counter-measure projects in the defense program, will be one of many advantages of this new structure. Our research budget has been expanding . . . with our growth in the electronics and communications industries and this change is designed to meet the needs of that expansion."

The new IT&T Laboratories will include facilities at six major locations: Nutley and Belleville, N. J., San Fernando and Palo Alto, Calif.—all units of Federal Telecommunication Laboratories; the research and development facilities of Farnsworth Electronics Co. in Fort Wayne, Ind.; and a research and development group in Kellogg Switchboard & Supply Co., Chicago.

Also to be incorporated in the new division are flight test stations at the

at last! a low cost MULTIPLE TERMINAL BOX for Planned Telephone Systems



Designed to accept as many as four type 44 terminal blocks, Wiremold's new 2644T Multiple Terminal Box permits Planned Telephone Systems *without attaching fittings to office furniture.* Installation is easy—no new tricks or special equipment are needed. It can be hooked up to any overfloor system—and it's used with underfloor systems as well.

For a trip proof cable system, 2600 Pancake® is the flattest overfloor duct made. It's strong as a bridge, and easy to install with a few simple fittings.

Wiremold developed the first single terminal box for overfloor applications, and again is first with the multiple terminal box. For full information about these Wiremold developments, write:

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Teterboro and Lincoln Park, N. J. airports, and test installations at Telegraph Hill in Hazlet, N. J., Great River, N. Y., and Atlanta, Ga.

The IT&T Laboratories will be directed by Henri Busignies, now president of Federal Telecommunication Laboratories, one of IT&T's principal research units. Mr. Busignies, who has been with IT&T for 30 years and has served as president of FTL for the last two years, is an outstanding scientist and inventor. He holds more than 100 patents in the fields of aerial navigation, radar, and communications. The headquarters of the new organization will be at 500 Washington Ave., Nutley, N. J.

Graybar Names Three To New Positions

Graybar Electric Co., Inc., recently announced three executive appointments.

Edwin Lex Bacon, has been named national advertising and sales promotion manager, effective June 1. The appointment was announced by R. B. Sayre, Graybar's vice president in charge of sales.

Mr. Bacon joined the company in August, 1939, in the advertising and sales promotion department. In February, 1945, he was promoted to assistant advertising and sales promotion manager, which position he has held until his present appointment.

The other assignments are that of R. M. Gibbs to operating manager at Birmingham, Ala., effective May 1; and that of J. P. Majors to manager at Jacksonville, Fla., effective Apr. 16.

Mr. Gibbs' appointment was announced by J. E. Fontaine, southern district manager, and Mr. Major's appointment was released by D. L. Harper, peninsular district manager.

General Cable's MacDonald Elected NEMA Treasurer

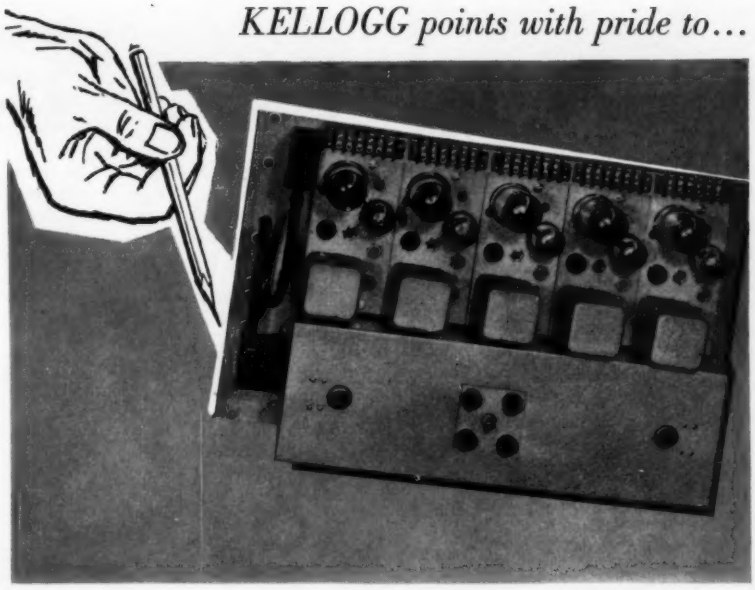
J. R. MacDonald, chairman of the board and president of General Cable Corp., has been elected treasurer of the National Electrical Manufacturers' Association for the coming year, it was announced recently.

Mr. MacDonald, a member of the association's board of governors for the past six years, succeeds B. C. Neece, president of Landers, Frary, and Clark.

Mr. MacDonald is a member of two of the association's committees: Officers; and Program and Budget.

He is also a member of NEMA's wire and cable section, armored cable section and rigid steel conduit and electrical metallic tubing section.

KELLOGG points with pride to...



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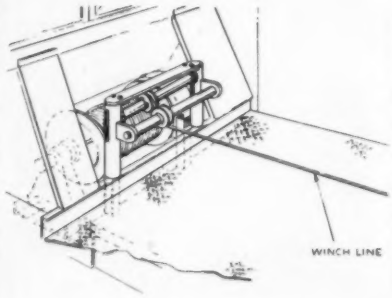
News on New Products

LEVEL WINDER—J. H. Holan Corp. is now manufacturing a new level winder that lays winch cable on a drum neatly—even under extreme load conditions.



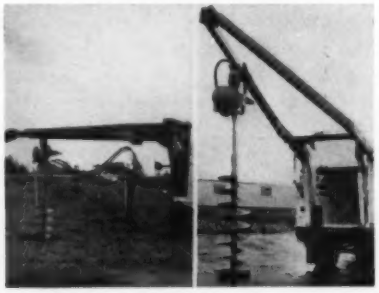
The Holan level winder has a unique three-spring arrangement in the two posts that support the rocker bar of the winder. The company reports that the result is even, no-kink winding whether the cable has only a slight amount of tension or is subject to a horizontal pull equal to the capacity of the winch itself.

Holan cites the following benefits to be derived from the use of its level winder: safe operation, longer cable life and lower maintenance costs.

Made specifically for 20,000-pound Holan Series HB9 winches, the new level winder can be adapted to other units. Field installations can be made in a few hours and with a minimum of work required for alterations, the company states. Winch lines employing the Holan level winder are threaded through a sheave either at the back of the truck or on a derrick head. Request NP856.

•

OPTIONAL FEATURE FOR POWER DERRICKS—J. H. Holan Corp. also has come up with a new optional feature for Series 6800 and Series 3700 power derricks. Hydraulic lines for the digger run along either side of the derrick leg in the photo at the right.



This arrangement keeps lines out of the mud and out of the way, and allows the digger to be stowed without disconnecting the hydraulic lines.

The left photo shows conventional handling of digger lines. Diggers, derricks, power feed attachments, jacks and bodies in the photos are all manufactured by J. H. Holan Corporation. Request NP857.

•

SLIDING DIRECTORY TRAYS—Telephone directory trays are now avail-

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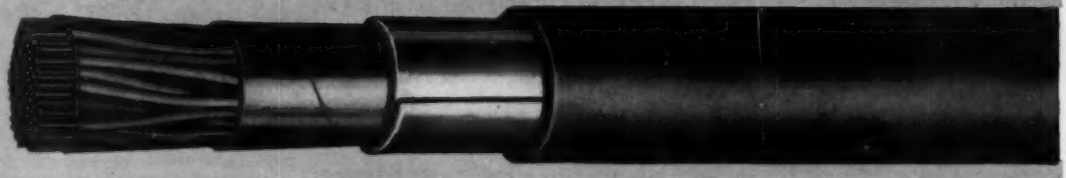

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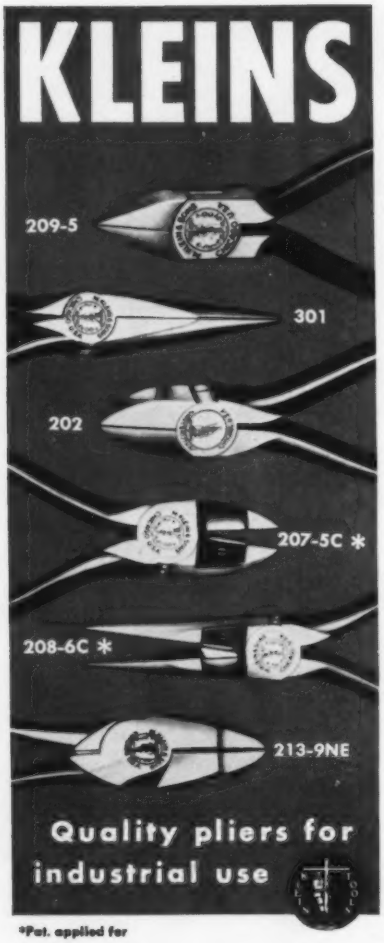

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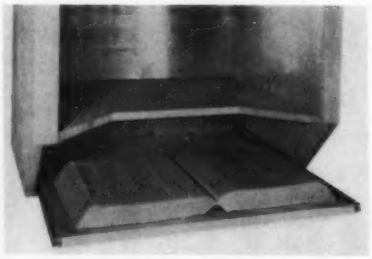
able on Suttle Equipment Corp.'s Model A-6 single or double commercial telephone booths.

These booths can be provided with one, two or three shelves under each booth opening for package or parcel



storage, or for additional telephone directory placement. The shelves are an optional feature of the Model A-6 booth.

Steel slide-guides are installed on each shelf with a lock to control travel-out distance.

In addition to the Model A-6 commercial telephone booths, these sliding shelves are available as optional equipment on Suttle's Model A-5 (modular) booth, Model A-8 (industrial), Model A-3 (directory), and A-14 (office equipment) booth. Request NP858.

•

SPRING-TENSIONED SCREWDRIVER—Suttle Equipment Co. also has announced a new spring-tensioned screwdriver designed for use by telephone company repairmen, installers and linemen.

This specialized tool, designated S.E. 2348, contains a spring-tensioned, pointed plunger which runs through the bit to exert a steady pressure upon the

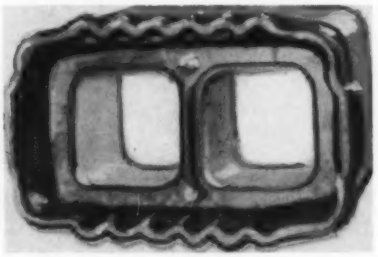
small screw or piece part. This insures positive seating, whether or not there is a hole in the screw slot, the company states.

The bit is double-ended, with two sets of points, one set on either end. These case-hardened bits will accommodate the end of practically all miniature screws.

The company reports this high-quality tool is also easy to use, even in confined spaces. The screwdriver is knurled for almost its entire 4½-inch length. The handle is also equipped with a rotating knob which permits the screwdriver to turn easily in the palm as it is used. Request NP859.

PLASTIC SLEEVE DUCT CONNECTOR—Announcement is made by Plymouth Industrial Products, Inc., of a two-way M.T.D. plastic sleeve connector for joining two-hole clay duct.

This size now rounds out the line of plastic M.T.D. sleeve connectors so that these are now available for all sizes of duct including 2, 4, 6, 8 and 9-hole sizes.



The company states that a brochure is available describing how these are used to obtain savings in underground construction, and to make for faster job completion as well as reduce water leakage in underground ducts.

Development of these M.T.D. sleeve connectors has been carried out over the past five years, with the cooperation and suggestion of many operating companies, their engineers and construction people, the company reports. Request NP860.

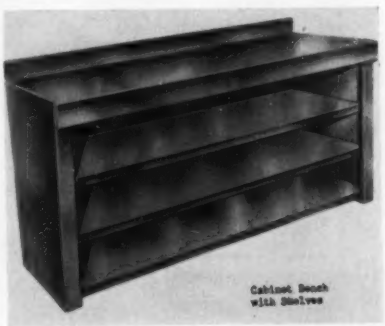
•

CONDUIT COUPLING — Plymouth Industrial Products also announces development of a pipe in socket coupling for slotted end conduits. This coupling is a rigid tubular duct molded of thermoplastic material, and joined together by telescoping bell and spigot joints.

The new coupling allows uniform rigid molded plastic pipe to be easily assembled in the field when used in underground construction for drains or conduit lines. Request NP861.

•

CABINET WORK BENCHES—The Equipto division of Aurora Equipment Co. announces a new series of 104 cabinet work benches, which brings to



365 the total number of Equipto work bench models.

These new benches feature closed ends and backs with doors, drawers and shelves as desired. Benches are available with 12-gauge steel, masonite-on-steel, maple, or plastic-bonded tops. The company states the benches have generous storage capacity especially designed to save time and steps for production and maintenance workers.

Four, 5, and 6-foot lengths are available. All bench legs are tapered for toe room, and equipped with electrical knockouts for handy power source. Request NP862.

•

SELECTIVE HUBS FOR FOUR-WHEEL-DRIVE VEHICLES—Dualmatic Products Co. announces availability of selective hubs designed for four-wheel-drive vehicles.

Among the features of the new 1958 models is "criss-cross" design. The new design will allow for quick change action in the conversion of four-wheel drive because it is the first selective hub which does not require special wrenches or tools of any kind to make the conversion, or take extra time to secure the change-over levers, the company reports.

Two slanting levers are employed in changing from "free to lock." These levers hold themselves into the hub without catches or other devices. No rocking or moving of the vehicle is necessary because the new Dualmatic swings the axle into position as soon as the levers are switched. The new "criss-cross" design is available for any four-wheel model from Jeep to 5-ton truck.

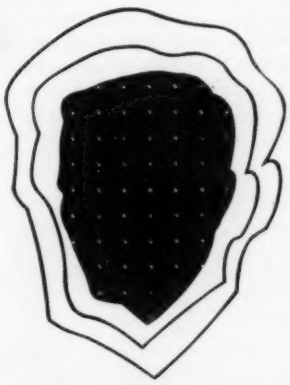
The company lists other features of Dualmatic hubs as follows: no hub drive gear back lash and a safety feature which prevents parts damage, because a Dualmatic hub can be installed closer into the wheel than any other brand. This means that the wheel and tire of the vehicle are able to act as shields to protect the hub from damage. Also the hubs may be installed in less than an hour, and no special equipment is necessary. Request NP863.

•

BILL RECEIPTOR—Heller Roberts Mfg. Corp. has announced its American Model 225 receiptor, an electrically operated, motor-driven machine designed especially to record receipt of payment on post-card-type bills, which are used in conjunction with punch card tabulating systems.

The machine was designed to avoid destroying any information punched on the company's side of the bill. This is achieved by using a printing head on

TRAIN WITH TTI



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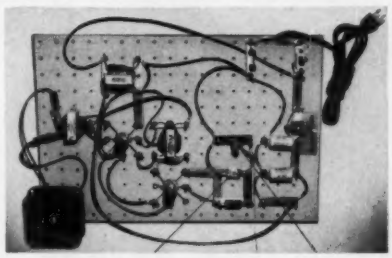

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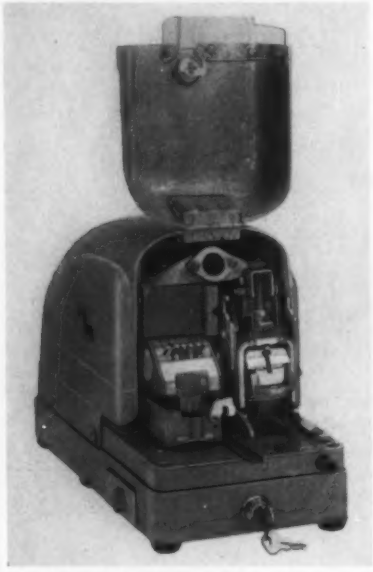
the right hand side and a perforating head on the left to give positive control. The bill is separated at the time of insertion by a bursting bar breaking the bill at its line of perforation.

The company states that the American Model 225 receiptor does the following in less than a secnod: (1) perforates customer's receipt with "Paid," date, location number, company initials and teller numbers; (2) prints stub with date and teller number, and (3) automatically detaches stub from the receipt.



The machine is equipped with door lock, ignition lock, safety guards and a safety switch (machine will not operate when door is open). Request NP864.

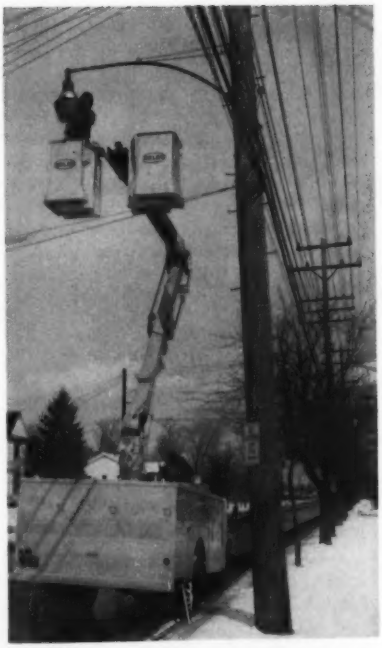
•

AERIAL BOOM ELBOW—After three years in the development stage, the new Holan elbow has been introduced.

The double-armed, twin-bucket unit has direct-acting, aircraft-type controls that provide for easy operation and a minimum of maintenance.

Holan engineers developed an exclusive control system that has hydraulic lines extending only to the cylinders; no lines pass through the hinged joint between upper and lower arms. In addition to eliminating hose and tubing, the Holan control system does away with oil leakage and bleeding of lines to eliminate sponginess. Any maintenance needed requires no special tools, according to the company.

Because the control cables are under constant tension, the control levers have a positive feel and the company states



that there is instantaneous response to movement of the levers. The three levers are located on the support shaft of the right-hand bucket and do not interfere with arm movements. A set of levers is also mounted on the mast for emergency control.

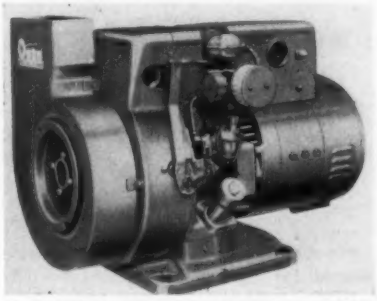
One lever controls the lower arm; a second, the upper arm; and a third, the rotation. A vacuum control valve is coupled to the power take-off shifter linkage to prevent truck movement while the elbow is being operated. Another safety device, an ignition cutout circuit, insures both arms being nested in support brackets before the truck can be moved, the company states.

The Holan elbow has a maximum ground-to-floor height of 36 feet, 10 inches. It reaches 31 feet, 4 inches horizontally, and will bend 8 feet, 8 inches below ground level. The upper arm travels 270 degrees; the lower arm, 80 degrees. The mast rotates 360 degrees continuously in either direction. Upper and lower arms are controlled by double-acting hydraulic cylinders working in combination with aluminum drive sheaves.

Work buckets—22 by 22 by 38 inches deep—are made of non-conductive fibre-glass-reinforced plastic. They are supported by a knee-deep brace insulated from the upper arm. A special flare at the bottom of each bucket provides foot room for comfortable standing while working. Capacity of the elbow is 600 pounds.

Work buckets are mounted to provide protection for workmen against 50,000 volts, it is reported. Request NP865.

AC/DC ELECTRIC PLANTS—Two new gasoline-driven electric generating plants, in 1kw and 2kw sizes, each with a high 30-amp regulated 12-volt, dc battery charging circuit, have been announced by D. W. Onan & Sons Inc.



Onan electric generating plant, 2 kw size.

Designed specifically for charging batteries on work trucks or other vehicles which have a high current drain imposed upon them by lights and communications equipment, these new units will effectively reduce operating and maintenance costs for telephone companies and other users of mobile communications equipment, it is claimed. These combination ac/dc electric plants can be used instead of the vehicle engine to keep truck batteries constantly charged while at the job site.

In addition to the dc battery charging circuit, each of the two units will provide either 1,000 or 2,000 watts (according to their rating) of ac power for the operation of electric tools and floodlights.

Both model 1AJ-IRV1330 (1kw) and model 2LK-1RV1330 (2kw) are equipped with Onan's *Vacu-Flo* Cooling which the company says simplifies installation of the unit in utility line trucks and other vehicles. *Vacu-Flo*, it is claimed, permits the generating plant to be mounted in a compartment not much larger than the set itself . . . with only small ventilating openings needed for intake and exhaust.

Each model is powered by a single-cylinder, 1800 rpm, 4-cycle engine directly connected to an all-climate generator. Both models are completely self-contained, with remote starting controlled from the plant, the truck cab instrument panel, or anywhere else convenient on the vehicle. Effective radio suppression minimizes interference with communications equipment, according to the company.

To prevent the battery from being charged from both sources—the generator and the vehicle engine—at the same time and possibly damaging the truck's charging regulator, a disconnect relay automatically opens the generator's charging circuit when the truck engine is running. A thermal overload breaker protects both battery and battery charging circuit, it is reported. Request NP866.

•

ELECTRIC GENERATORS—Three new high-capacity, ac, gasoline engine-driven electric generating plants in 100,000, 125,000 and 150,000 watt sizes also have been announced by D. W. Onan & Sons Inc.

The three new models, featuring alternators with newly developed Onan static excitation and magnetic amplifier regulation are coupled to water-cooled Waukesha engines.

These units, models 100WA, 125WB, 150WB, according to the manufacturer, have been engineered and developed especially to meet the ever-increasing demands for auxiliary emergency power wherever dependable standby electric power insurance is desired and needed.

Model 100WA is a complete electric generating plant (as are the other two units) with the gasoline engine, alternator, exciter and control panel assem-

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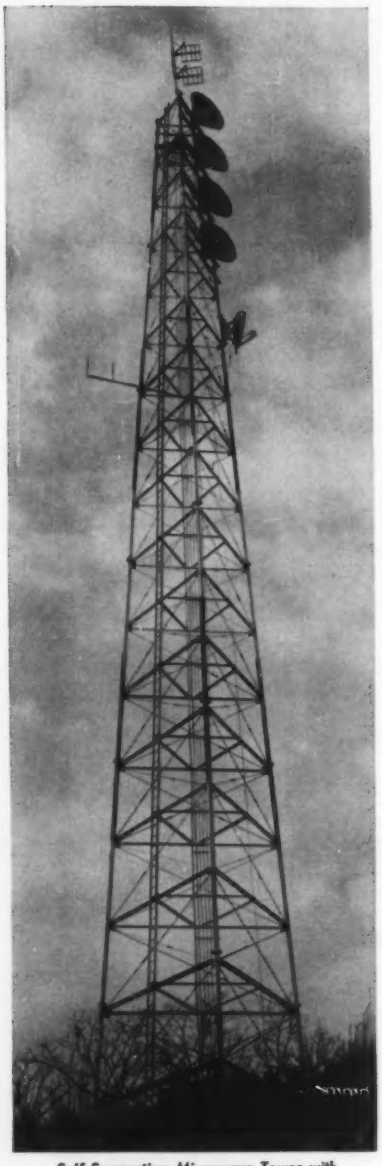

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bled into one compact unit. This unit is rated 100kw, 125kva at 0.8 power factor, and is available in all standard voltages.

Prime mover for this 100kw generating plant is the gasoline-driven Waukesha model 145-GZBU, 817 cu. inch, 219 hp at 1800 rpm, 6-cylinder engine. The special features of this engine, as listed by the company, include: Stellite faced exhaust valves and seats; positive type valve rotaters; full pressure lubrication; oil bath air cleaner; low oil pressure temperature cut-off; high water temperature cut-off.

This Waukesha engine is directly connected to an Onan single bearing four-pole, revolving field-type generator equipped with a static exciter and magnetic amplifier regulator. This regulator provides plus or minus 3 per cent regulation of ac output voltage from no load to full load. The wave form deviation factor does not exceed 5 per cent, it is reported. The instantaneous voltage dip is never greater than 20 per cent of rated voltage when full load at rated power factor is applied to the generator. Stable generator operating conditions are established within two seconds following any sudden change in load between no load and full load or between full load and no load, the company claims.

The control panel, containing equipment to operate engine and generator, includes an electric oil pressure gauge, water temperature gauge, battery charge rate ammeter, and stop and start buttons for manual operation. It is mounted in a self-contained, totally enclosed cabinet on top of the generator.

Optional accessories for the 100kw model include a water-cooled exhaust manifold, natural or lp gas carburetion and heat exchangers, city water cooling with heat exchangers, fuel accessories and line transfer controls. Request NP867.

•

SHOP ON WHEELS—A portable "shop on wheels" which is reported to perform all necessary functions in processing telephone and electrical wire and cable is now being manufactured by Suttle Equipment Corp.

Called the Suttle *Cablecart*, this unit can be used for transporting, cutting, measuring, coiling, and handling wire and cable. One man can move the *Cablecart* about a shop, the company says.

Cablecart components include a 5-digit Veeder-Root measuring meter with a 2½-inch outside diameter capacity (up to 750,000 cm). The all-position, five-ton hydraulic cutter has a 3½-inch outside diameter capacity.

Two foot-lock truck stops are included for firm positioning. The unit also has sprocket gear and chain drive to operate the two-piece take-up, pay-out reel. A control wheel to operate the reel is fixed on each side of the *Cablecart*. It is 5 feet long, 42 inches high, and 27 inches wide. Request NP868.

•

TELE-MUFF JR.—Made of soft, pliable, virgin vinyl foam, the Tele-Muff Jr., according to the manufacturer, relieves ear pressure, assures comfort, and is lightweight, sanitary and washable. Colors are black, blue, green, pink, red, yellow, and white.

The company reports that operators

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say the Tele-Muff Jr. definitely increases the operator's efficiency because it frees her from the necessity of holding the head-set with one hand and working with the other hand as many operators often do. Tele-Muff Jr. also saves the delicate head-set instrument itself, it is claimed. Request NP869.

•

EARTH BORING MACHINE—Wyoming Valley Equipment Division recently introduced its new model B Sterling earth boring machine designed

specifically for the heavier duty requirements of power utilities.

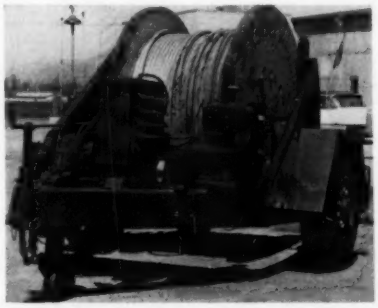
The model B, as described by the manufacturer, incorporates improved, heavier, and more rugged engineering features such as the 2½ inch x 2½ inch 17-foot digging bar (up to 25 foot bars available); a working barrel permitting more pressure hydraulically; heavier ring and pinion gears; a heavier aluminum tube pole setter and many other mechanical features designed for utility digging under conditions considered extreme.

Wyoming Valley Equipment's model A digger may be modified to include the new model B features. Request NP870.

•

REEL WINDER—The *Pengo* model 6100 TCRW torque converter drive reel winder, that loads and unloads reels of wire by power and turns the reel in either direction, has been announced by Petersen Engineering Co., Inc.

The unit was designed for use in conjunction with the *Pengo* line of tension stringing equipment as a reel carrying dolly and to pay the conductor out over the bull wheels of the tensioner at the pay-out end of a wire stringing operation, and as a reel winder behind



the bull wheels of a *Pengo* bull wheel cable puller at the other end of the operation.

Disc brakes are used for providing the necessary slight drag on the reel to prevent over-run of cable between the reel winder and the bull wheels of the tensioner. The engine is not in use during this period of the operation; the braking action being purely mechanical.

At the pulling end of the line, both constant engine speed and the decreasing rpm of the reel due to the build-up of the pulling line onto the reel are compensated for by the use of a special *Pengo* torque converter, the company says.

The manufacturer lists the following features for the *Pengo* torque converter: It is able to function continually under 100 per cent slippage without overheating; and that torque is greatest when greatest torque is needed, which is usually when slippage is taking place. Request NP871.

Hughey & Phillips Names SE Sales Representative

Maitland K. Smith Co. has been appointed southeastern sales representative for Hughey & Phillips, Inc., Burbank, Cal. Hughey & Phillips manufactures obstruction lighting equipment, controls, and complete kits.

Maitland K. Smith Co. maintains offices in Atlanta, Ga.; Birmingham, Ala.; Matthews, N. C., and Clearwater, Fla.

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IN THE NATION'S CAPITAL

Concluded from page 18

But Moulton pointed out that this report had not been endorsed by the full commission and that the final report of the commission made no recommendation for regulatory controls over Western Electric's prices. Moulton also recalled that the Walker investigation did not permit Bell System witnesses to cross-examine or introduce evidence.

The subcommittee's hearings will probably go on throughout May, although no timetable has been announced.

The Oversight Subcommittee Hearings

Over before the House Subcommittee on Legislative Oversight a former patent adviser to the FCC, William H. Bauer, sniped at his former agency for so-called "patent abuses." The telephone industry, as such, did not figure in this controversy. Mr. Bauer was the only witness in two days of hearings on patent practices in the broadcasting industry.

Rep. Oren Harris (D., Ark.), subcommittee chairman, said no further hearings on the subject were scheduled. He noted, however, that it might be "helpful to us some day to get an appropriate person from the commission to give" the FCC's current views on patent practices. He also said the subcommittee would like to hear someone from industry.

Representative Harris said that his subcommittee also would return to the award of television channels and other matters relating to the personal conduct and activities of members of the FCC "just as fast as we can get ready." Two other agencies, the Federal Power Commission and the Securities & Exchange Commission, are also being investigated, he said.

Under questioning of the subcommittee's chief counsel, Robert W. Lishman, Mr. Bauer went over again his testimony that the FCC had adopted a "hands-off policy" toward curbing patent practices. This, he contended, permitted the Radio Corp. of America to create a patent monopoly. This corporation denied the allegations in statements on Apr. 23 and 24 following Mr. Bauer's appearances.

Mr. Bauer, now a Washington, D. C., patent attorney, said RCA had "concealed patents" by not printing the numbers of its patents on its equipment. Instead, he said, it gave a statement that "if anyone wanted a particular patent, they could ask RCA." But even if someone asked, he encountered "resistance" from the corporation to give information, he declared.

The Menomonee Falls Hearings

The contested Bell acquisition case before FCC Chief Examiner Cunningham did not last very long after the preliminary presentation was submitted. This consisted of testimony purporting to show that the purchase of the Menomonee Falls Telephone Co. property by the Wisconsin (Bell) Telephone Co. was in the public interest. Wisconsin Bell's argument takes the line that the subscribers in the area will be better served and prefer service from the Bell company which, in fact, is already serving all around the Menomonee Falls area.

Wisconsin Bell also takes the position that any excess over original cost depreciated, which it proposes to pay for the property, would be charged to a surplus account. This means that it could not affect the rates because such excess amount could not get into the rate base. It would have to be absorbed by the Wisconsin Bell shareholders.

The USITA is contesting the acquisition on grounds that such acquisition of such Independent properties by the Bell System, in cases where other Independent interests are ready, willing, and able to buy properties for sale, are not in the public interest.

A recess was taken after the introductory evidence to permit USITA and the FCC staff to examine the evidence, especially the figures so far put into the record. After that, the FCC examiner will hear the other side of the argument.

REA ALLOCATIONS

Continued from page 26

Cape Fear Telephone Membership Corp. and Thatcher Carr is manager.

•

Montrose Mutual Telephone Co., Dieterich, Ill.; $147,000; Apr. 14.

These funds will be used to improve service for 119 existing subsribers and to furnish initial service to 87 farm families. The borrower has recently acquired the Union Telephone Co., Elliottstown, which now provides magneto service to the present subscribers. Funds are provided in this loan to reimburse the borrower for interim financing of this purchase.

According to present plans, the Elliottstown community will be served from the borrower's Dieterich exchange

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when the system is converted to automatic operation. A portion of today's loan funds will be used to complete the previously approved system.

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Virgil G. Tays is both president and manager of the Montrose Mutual Telephone Co.

UNDERGROUND CONDUIT

Concluded from page 20

ultimately by two or three cables, in which case it is advantageous to place a minimum of two ducts in the trench with the buried cable. This assumes the single duct type of conduit in 8 to 10 foot sections with collar, or similar, joints and not requiring concrete encasement.

Later, small manholes may be built when and where required for future cable pulling and splicing. By making these manholes more in the nature of splicing boxes, they do not have to be built immediately, thus deferring the cost and reducing the annual charges on them after they are built. With only two or three ducts, larger manholes are scarcely justified.

One duct in the trench with the buried cable is seldom recommended, as no opportunity is provided for replacing a defective cable or for replacing a small cable with a larger one after the single duct becomes occupied. For this case, only a limited subscriber area is to be served.

(3) *Placing conduit in the trench and no buried cable.* When the telephone service potential of the area may require more than three cables ultimately, underground conduit is recommended for placing in the trench. No thought of placing buried cable should be entertained under this condition. In areas requiring toll as well as exchange (i.e., subscriber, inter-office trunk and extended area trunk) cables, the toll cables must oftentimes be in a separate sheath from the exchange pairs. Consequently, underground conduit is almost always required, when both types of cable facilities are necessary.

Whitney Blake Appoints SW Sales Representative

Wallace H. Johnson has been appointed sales representative for Whitney Blake Co., wire and cable manufacturers, New Haven, Conn., it was announced recently. Mr. Johnson will cover Texas, New Mexico, Louisiana and southern Mississippi from his headquarters in Dallas.

W. H. JOHNSON

Mr. Johnson has had more than 16 years practical telephone experience as a plant supervisor for the General Telephone Co., and has also had several years experience as a sales engineer for the Aro Equipment Co. of California.

His service record includes a little more than three years, in which time he rose from private to second lieutenant.

Mr. Johnson's office is located at 4350 North Central Expressway, Dallas 6, Tex.

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Over 95 per cent of the vehicles involved in accidents in the United States in 1957 were in apparently good condition. More than 85 per cent of the fatal accidents came during clear weather, 79.6 per cent on dry roads. These facts emphasize the factor of driver responsibility.

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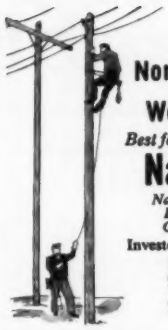

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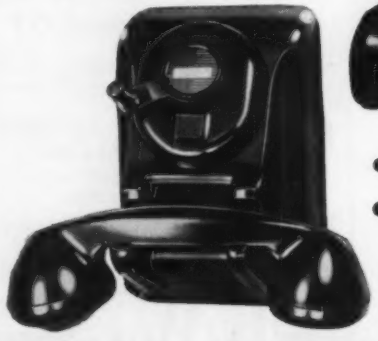

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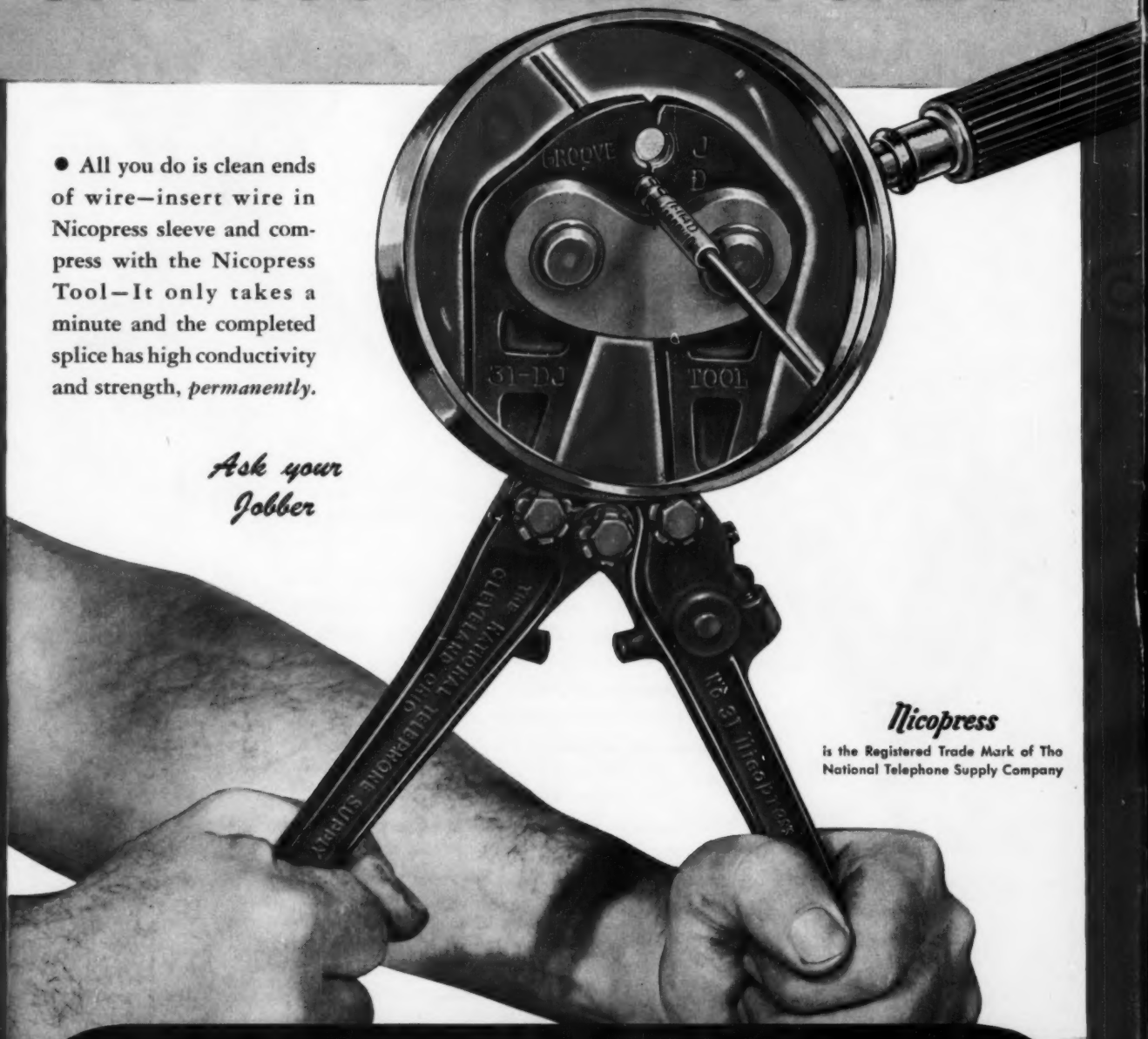

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